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Models for Improving and Optimizing Online and Blended Learning in Higher Education

Jared Keengwe and Joachim Jack Agamba
Models for Improving and Optimizing Online and Blended Learning in Higher Education

Jared Keengwe
*University of North Dakota, USA*

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<td>This chapter focuses on the need for the inclusion of instructional design principles for in-service and pre-service teacher professional development to assist faculty transition effectively to blended instructional delivery. The need to improve the design and delivery of content of Course Management Systems (CMS)/Learning Management Systems (LMS) in blended teaching and learning to serve 21st century learners is emphasized. Administrators and technology support centers have a critical role to play in providing alternative support for faculty if the optimal use of alternative learning environments are to be realized.</td>
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<td>Learning Management Systems (LMSs) aid in the achievement of differentiated instruction and therefore should be embraced in spite of the time-consuming issues associated with it. This chapter argues that differentiated instruction is worth the time and effort because it responds to individual needs, and responsive teaching maximizes each student’s success.</td>
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<td>Online instruction is becoming a necessity for all instructors. Communication is the overarching imperative. Delivering instruction using the Rich Environment for Active Learning (REAL) model has the potential to remove communication barriers and actually draw more students into the social aspect of instruction and truly engage them as lifelong learners.</td>
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Student-centered learning practices allow learners to become connected. The purpose of this chapter is to assist faculty in developing active learning strategies that are learner-centered utilizing technology for online and blended environments.

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How can institutions of higher education leverage the gains of social media for instruction to assist learners through the use of online and blended environments? The authors provide a rationale for cultivating community in online environments as well as provide descriptive cases of instructors who have effectively used a learning management system to cultivate vibrant learning communities in online and hybrid courses. They also offer multiple faculty development models for helping faculty develop a social, teaching, and cognitive presence in online environments.

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This chapter presents findings related to the use of online writing modules developed to support English as a Second Language and nontraditional English speaking college students. Participants reported improved content-specific writing skills, transfer of writing skills to other content areas, and increased self-efficacy in writing. This chapter asserts that the need to support non-traditional learners is growing. A writing program module for ELL college students is featured.
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This chapter presents an analysis of approaches and models employed by faculty at one institution of higher learning to develop and deliver two blended courses as part of the institution’s strategy of using technology to enhance undergraduate student engagement and retention. The analysis shows that a multimodal approach that infuses technologies and media and a proactive institutional policy in favor of blended learning, coupled with strategic faculty development, provides the best pathway to developing robust blended courses that are truly learner-centered. A call to create robust courses to serve learners in a blended and online course environment is presented.

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The purpose of this chapter is to examine online education in order to understand how to improve student outcomes and retention. This chapter offers six specific recommendations that faculty, students, administrators, management, and support staff can undertake to assure that students and faculty will have the resources to successfully complete an online academic or training program.

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Technology and meaningful engagement? Blended vs. traditional learning environments? The chapter presents a blended course model, assessment data, and ideas for contextual reflection about how change in higher education paradigms is affecting the humanities in order to address them in a cooperative, non-disruptive way. Finally, the unique context, assumptions, and causes for resistance to change in the humanities with regard to technology and blended pedagogy are discussed. This chapter is intended to help readers anticipate and address particular disciplinary perceptions of blended learning.

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Shani Salifu, Concord University, USA

This chapter probes an assertion by Gustafson and Branch that it is easier to classify instructional models when guided by the needs that call for them. Specifically, the chapter examines pertinent questions that look at some assumptions guiding the choice of instructional models, the three design situations identified, and some characteristics that separate the various design instances.
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As the number of students studying online continues to increase, there is a need to develop models that can improve online collaborative learning with minimal involvement of the instructor because the instructor might not be able to cope with increased number of students. To address this need, this chapter discusses a novel model for improving online collaborative learning that uses Machine Learning (ML) techniques. The focus of this chapter is on opportunities for collaboration that online environments provide.

Chapter 12
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The chapter provides an analysis of transcriptions of blog posts for a face-to-face course for evidenced-based or text-based support. The purpose of the study was to examine the transcription of the students’ postings and Computer-Mediated Communication (CMC) to look for the three types of elements that comprise the Community of Inquiry according to Garrison, Anderson, and Archer, as well as examination of broader themes and trends across the data.

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This chapter describes a field director’s revision of a field experience placement system and model for a teacher education program at a two-year institution. The conversion from a paper system to using a learning management system to support the field experience process of 324 students was documented. Results from this case study indicate a positive correlation between the components of the process and the features of the learning management system. In addition, findings from the case study reveal that the learning management system provides additional benefits for program assessment.

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This chapter presents a case of a successful integration of digital curation in a repeating series of blended classroom activities. Digital curation, in education, is understood as the collection, organization, interpretation, summary, and sharing of online resources by learners on a topic of inquiry. The chapter describes the activities, the learning design, and the outcomes of a digital curation activity sequence. This provides other educators with a learning design roadmap for engaging students in pre-lecture activities or blended learning that adds value to classroom lectures.
Chapter 15
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Tony Lee, University of Oklahoma, USA
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Web-based authoring tools are great additions to online education and training programs. For instance, the Web-based authoring tools enable instructors and trainers to create media-rich learning instructions and transform dry Web content into engaging and exciting learning content. Besides recreating and transforming Web content, Web-based authoring tools also play an important role in expanding learners’ attention spans and their readiness to learn. This chapter provides a portrait of roles and impacts of Web-based authoring tools in online learning environments.

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With any book about models, I look for a process and a clear explanation of that process, and hopefully some evidence to back up the model. An effective model, one that routinely accomplishes its purpose, does not emerge fully featured and understood. Models improve by being continually tested and evaluated. For educational models in particular, I am looking for the developmental stage of the model. As Rowe (1991) outlined, models can be classified hierarchically, one type informing the other. Models initially are descriptive serving to help users to understand a system and its context. Next are predictive models providing a forecast of what might happen. Explorative models enable systematic exploration and a variation of basic features. Ultimately, planning models are predictive but help us to evaluate predicted outcomes in terms of planning goals. Descriptive models, forming the foundations for the other models, look at the past, while predictive and explorative examine the present, and planning models focus on the future.

The study of these models can proceed along two directions; the first being a design focus or a design question: What are the features of the model design, how is the model used, and how is the model evaluated? A design focus pulls from design and development research providing a systematic approach to studying the model’s development along typical lines of instructional design (Richey & Klein, 2007). A second direction, more along program evaluation lines, asks how to help faculty members learn to teach using blended and online deliveries? Both study directions – instructional and professional developmental – are needed to systematically add to the knowledge base of models for online/blended learning. The instructional direction examines teaching decisions in light of learners, content, and context, while professional development addresses the contextual issues of the instructor, students, academic program, institutional mission, and professional organizations.

With a book about models for learning, I also look for learning outcomes and teaching options that support that learning. Multiple approaches pull from different learning theories and perspectives, so faculty members who move to online teaching have an opportunity to not only consider teaching options, but the perspectives that underlie those approaches. Thus, the move to online teaching affords a faculty member with a prompt to re-examine the purposes for a course and how that course is taught and delivered. Such a re-examination may conflict with a range of perspectives, from a faculty member who believes that a particular perspective (e.g., social constructivist) is essential or that no-re-examination is needed at all (e.g., a content-focus). Despite these conflicts, being clear about the perspective and/or purpose underlying the instructional activity can only help faculty and students. Teaching decisions can be pragmatically guided by what is needed. These needs can be primarily learning outcomes but can also include faculty and institutional goals and specific instructional and institutional situations, the contextual realities surrounding the content in that place and at a particular time for students.
The questions I pose to readers, then, are how has this edited volume (a) addressed process models for blended/online delivery, how have these models (b) supported learning outcomes and teaching approaches, and (c) how have these models helped faculty to be successful in their teaching and academic careers?

In terms of process models, many of the chapters discuss the constraints of a course management system (CMS) on providing student-centered activities. The use of a CMS is not by itself a model for learning. A CMS is usually a commercial product and is a major feature within an overall approach for how learning is supported in blended or online deliveries. Features of models for learning need to be based on learning outcomes, how teaching supports these outcomes, and what teaching decisions need to be made for how a CMS is used. Some of the chapters document efforts that prompt instructors to examine their own beliefs, re-examine teaching options, and document that learning has occurred, sometimes by both instructor and student.

In terms of learning outcomes within these models, I see student engagement and community-building as a major focus for the chapters. Words such as student communication, interaction, active engagement, community, groups, and collaboration suggest that the authors are viewing student engagement and community as key purposes (even as learning outcomes) for the online/blended environments. When active or engaged learning is an overall purpose for teaching, then it’s useful to define through learning outcomes what is meant by these engagement and community-building words, thus enabling student performance to be assessed.

Some of the chapters focus on professional development and models for delivering courses. These chapters report on the values of talking about student needs and peer sharing of specific cases and best practices. In addition, professional development delivery using online and blended approaches help to examine teacher and student perceptions of new delivery options and to discuss resistance to change.

I urge readers to study these chapters in terms of model features, learning outcomes, and professional development. Studying one’s teaching and the case studies of others provides opportunities to help educators examine the basis for teaching decisions and to re-examine the assumptions underlying these decisions. Any technology innovation, such as online and blended instructional delivery, serves to prompt us to re-examine teaching. Teaching can be examined by thinking through the full range of learning outcomes and that “developing community,” for example, might become a learning outcome if that performance is truly valued. Teaching decisions in online and blended environments also warrant a re-thinking of who the learners are. Finally, one’s teaching decisions can also be informed by the reality of the context of the learning setting. I also encourage you to contact the chapter contributors and engage in an ongoing discussion over how to build on their work through iterative and purposeful inquiry.

Neal Shambaugh
West Virginia University, USA

Neal Shambaugh is Interim Associate Dean of Academic Affairs in the College of Education and Human Services at West Virginia University. A graduate of Virginia Tech, he is a professor of Learning Sciences and Human Development at WVU and former program coordinator of Graduate Programs for Instructional Design and Technology. He is the author of two textbooks on Instructional Design, one for teacher education, Instructional Design, A Systematic Approach to Reflective Practice, and one for graduate programs, Mastering the Possibilities: A Process Approach to Instructional Design. He has taught courses in instructional design, teaching methods, visual literacy, IDT professional practice, design and development research, and educational psychology.
REFERENCES


The current generation of learners continues to prefer online and blended learning environments to traditional transmission methods (Allen & Seaman, 2011). These alternative technology-mediated environments reflect the increasing need to serve a generation of learners who prefer to learn through experience or by interacting with learning tools (Thomas, 2011). The purpose of this book is to further the conversation on the utilization of technology-mediated environments or platforms such as Course Management Systems (CMS) or Learning Management Systems (LMS), as well as models of instruction, to achieve learner-centered instructional practices that offer alternative means of communication for understanding.

A key question that is recurrent in the book is that of appropriateness of technology use. It is the responsibility of current educators to re-evaluate instructional practice relative to the needs of learners. This would require instructional design skills and strategies for faculty to successfully integrate technology tools and models that reflect differentiated instruction values to meet the needs of different types of learners. The proper use of current resources to address critical needs of learners should not only focus on what is outdated but also that which has been proven or has promise to engage learners and lead to desirable learning outcomes (Johnsen & Taylor, 2011). The time has never been more crucial for faculty to be able to transition from traditional delivery methods to technology-mediated methods that allow learners to make meaning through interaction with learning materials.

A persistent factor affecting faculty optimization of technology-integrated instruction still remains with the issue of time. It would require a paradigm shift on expectations of faculty by administrators and a similar shift in focus by technology support centers that assist faculty on technology integration for this expectation to become reality. Technology has always influenced educational practice and opportunities. To this end, in Models for Improving and Optimizing Online and Blended Learning in Higher Education, the chapter contributors establish the benefits of instructional technology over traditional methods and argue for a willingness to embrace the challenges involved.

Chapter 1 examines the need for the inclusion of instructional design principles for in-service and pre-service teacher professional development to assist faculty transition effectively to blended instructional delivery, and Chapter 2 argues that differentiated instruction is worth the time and effort because it responds to individual needs, and responsive teaching maximizes each student’s success.

Chapter 3 posits that delivering instruction using the Rich Environment for Active Learning (REAL) model has the potential to remove communication barriers and draw more students into the social aspect of instruction and truly engage them as lifelong learners.
Chapter 4 explores the need to assist faculty in developing active learning strategies that are learner-centered utilizing technology for online and blended environments, and Chapter 5 offers a rationale for cultivating community in online environments and multiple faculty development models for helping faculty develop a social, teaching, and cognitive presence in online environments.

Chapter 6 presents findings related to the use of online writing modules developed to support English as a Second Language and nontraditional English speaking college students. Participants reported improved content-specific writing skills, transfer of writing skills to other content areas, and increased self-efficacy in writing. This chapter asserts that the need to support non-traditional learners is growing.

Chapter 7 presents an analysis of approaches and models employed by faculty at one institution of higher learning to develop and deliver two blended courses as part of the institution’s strategy of using technology to enhance undergraduate student engagement and retention, and Chapter 8 offers six specific recommendations that faculty, students, administrators, management, and support staff can undertake to assure that students and faculty will have the resources to successfully complete an online academic or training program.

Chapter 9 presents a blended course model, assessment data, and ideas for contextual reflection about how change in higher education paradigms is affecting the humanities in order to address them in a cooperative, non-disruptive way. The unique context, assumptions, and causes for resistance to change in the humanities with regard to technology and blended pedagogy are also discussed. This chapter is intended to help readers anticipate and address particular disciplinary perceptions of blended learning.

Chapter 10 examines pertinent questions that look at some assumptions guiding the choice of instructional models, the three design situations identified, and some characteristics that separate the various design instances, and Chapter 11 discusses a novel model for improving online collaborative learning using Machine Learning (ML) techniques.

Chapter 12 provides an analysis of transcriptions of blog posts for a face-to-face course for evidenced-based or text-based support, and Chapter 13 describes a field director’s revision of a field experience placement system and model for a teacher education program at a two-year institution.

Chapter 14 presents a case of a successful integration of digital curation in a repeating series of blended classroom activities. The chapter describes the activities, the learning design, and the outcomes of a digital curation activity sequence. Chapter 15 provides a portrait of roles and impacts of Web-based authoring tools in online learning environments.

The centrality of blended delivery of instruction and its advantages over traditional transmission methods in traditional institutions of higher education are well established. The role of good instructional design principles as necessary tools are highlighted along with an acknowledgement of the barriers impeding optimal practice. In light of faculty resistance and associated demands for service and publication, the need for different approaches to assist faculty are respectfully placed. There is alignment of thought on the roles of LMS to aid in the achievement of differentiated instruction.

The role of instructional models and the cyclical process of revision relative to design and development is also examined as with the potential to deliver instruction using the Rich Environment for Active Learning (REAL) model for effective communication to produce life-long learning. Perhaps, a fundamental goal of instruction in post-secondary education should contain a substantial reliance on the constructivist paradigm of how learners make meaning for themselves rather than simply absorbing information (Jonassen & Land, 2011).
No grand claims are made for technology as a panacea for problems in education. Rather, this book acknowledges the limitations of traditional (face-to-face) transmission of knowledge and advocates for recognition of a cultural change brought about by technology. For higher education faculty, it means acknowledgement of the centrality of technology in eliminating physical distance between people as manifested by social media, for example. There is focus on the need to recognize learners’ experiences in online and blended environments as being significantly different from traditional transmission and interaction.

Finally, Course Management Systems or Learning Management Systems and Models are pivotal in repurposing learning for the acquisition and enhancement of skills in the 21st century. To this end, the centrality of the distance that the learner experiences as an alternative to traditional instructional delivery is evident in this book. To better serve the current generation of learners, including non-traditional students, faculty in higher education need to reassess what it means to be learner-centered in the design and delivery of online and blended instruction. To achieve this, assisting faculty to optimize technology tools in blended and online learning environments must become a priority for institutions of higher education.

The hope is that these scholarly essays will help forward the agenda and discussion on the significance and the need for a willingness to embrace the challenges involved in the process of optimizing technology tools in blended and online learning environments. Overall, this book provides very useful information for administrators and educators who are interested in the planning, design, implementation, and utilization of technology-mediated environments or platforms such as Course Management Systems (CMS) or Learning Management Systems (LMS) as well as models of instruction to achieve the best learner-centered instructional practices.

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REFERENCES


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Chapter 1

Optimizing Blended Teaching and Learning in Brick- and–Mortar Institutions

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ABSTRACT

The increase of blended instructional offerings in brick-and-mortar institutions provides leverage for the appropriate utilization of technology for instruction to optimize learning and serve a generation of learners who prefer such environments. However, the question of appropriate use of technology to improve student performance rests on teacher belief. Where faculty believe that they are content experts who should be trusted to deliver instruction as they see fit, the integration of technology becomes a choice. Some faculty see a clear demarcation between curriculum development and instruction as two separate processes involving separate activities (Heinich, 2011). The missing link appears to be a lack of appreciation for the benefits of instructional design principles that increase learning outcomes as a result of interactivity. This chapter focuses on the need for the inclusion of instructional design principles for in-service and pre-service teacher professional development to assist faculty transition effectively to blended instructional delivery. Barriers that impede the appropriate use of technology for blended delivery need to be identified and alternative approaches need to be applied to assist instructors and increase the effective use of technology in blended learning environments that are more learner-centered.

INTRODUCTION

Rogers’ (2003) observation that it takes time for a new innovation to be adopted and implemented appropriately is still relevant today, particularly with the integration of Course Management Systems (CMS), in brick-and-mortar institutions of higher education. In spite of the widespread use of CMS for blended instructional delivery, and the positive claims on learning gains associated with it, problems still abound on their proper implementation. For brick-and-mortar institutions, blended learning environments are a natural fit because they provide a bridge between traditional practice and online education. Blended instructional offerings also provide revenue (Yuan & Powell, 2013) as some students prefer the benefits of a traditional face-to-face and online combination.
Teaching and learning with blended formats provides a learning environment that enhances “real time” interaction with learning materials, discussions with instructors and among colleagues, and the facility of providing actionable feedback without having to wait until the “next class meeting”, as is the case with the traditional learning environment alone. A driving factor for the increased use of blended learning environments is that majority of students currently attending college consist of a generation who are accustomed to experiencing real time results from interacting with technological tools (Hartman, Dziuban & Brophy-Ellison, 2007). Such learners have therefore come to expect the similar experiences of “convenience and flexibility” from their learning process (Lin, 2009, p. 58).

However, it is this expectation that is driving two competing legacies of thought and fundamental preferences, among others, on teaching and learning practices in the 21st century. This is mainly because many faculty who are accustomed to traditional delivery and have learned that way themselves, see nothing wrong with continuing the same practice (Heinich, 2011). Yet interaction with content, as made possible by the distance aspect of blended environments is central to learning outcomes (Rhode, 2009). This reality is consistent with expectations of the current generation of learners who prefer technology to play similar roles in their learning the way it does in their lives. Educational technology, through the use of CMS, provides essentials for these alternative learning environments, making learner interaction with knowledge objects possible (Nycz & Cohen, 2007). As a consequence, CMS also dictate alternative methods of instructional delivery that are necessary for their successful adoption.

The goal of this chapter is to focus on the use of Course Management Systems as a student-centered learning environment, particularly with regard to issues concerning its effective and appropriate use as a blended learning environment for instructional delivery in brick-and-mortar institutions. The discussion centers on current practices in the utilization of blended learning environments with a focus on values of “student-centered learning environments (SCLEs)” as discussed by Land, Hannafin and Oliver (2012, p. 3). I argue that faculty professional development on CMS use should first focus on assisting instructors understand technology tools and their inherent variations relative to applicable theoretical frameworks as a precursor to the standard practice of assisting faculty learn to implement those tools.

Course Management Systems, through a collection of software applications, provide a virtual environment for learning and interaction not only between instructors and students, but among students as well (Betrus, 2008). Course Management Systems therefore provide access to course materials such as syllabi, assignments and quizzes, grades, links to related websites, tracking tools, feedback, and discussion forums that facilitate communication. The range of CMS available in higher education include, but are not limited to, Blackboard®, Moodle®, CourseInfo®, Desire2Learn®, eCollege®, Moodle, Sakai®, and Brain Honey®. Course Management Systems is sometimes used interchangeably with Learning Management Systems (LMS) because the latter is a corporate version of the former (Betrus, 2008). Moodle, an abbreviation for Modular Object-Oriented Dynamic Learning Environment, is used to provide examples where necessary. Nonetheless, the discussion is applicable for other CMS.

In a recent study on mobile learning practices, Chen and Denoyelles (2013) reported that although students continue to own mobile devices at a higher rate, learning with those devices occur outside the classroom, mostly without guidance from instructors. However, these students are not accustomed to utilizing technological tools for learning. They expect guidance from instructors on such use. Higher education institutions have responded to
such expectations by increasingly embracing technology for teaching and learning because the 21st century market place requires graduates who can compete in a technology-directed global market place (Oblinger & Murayama, 1996). Brick-and-mortar post-secondary institutions see the need to provide alternative, and improved methods of instructional delivery. However, many instructors continue to underutilize inherent instructional tools in blended environments, which in essence is inappropriate use, thereby underserving their students.

The question of appropriate use of technology to improve student performance rests on: a) teacher belief, and b) the quality of support available for appropriate technology integration. Where faculty believe that they are content experts who should be trusted to deliver instruction as they see fit, then the use of technology becomes a choice. Such faculty see a clear demarcation between curriculum development and instruction as two separate processes involving separate activities (Heinich, 2011). The other inhibiting factor can be found in the level and quality of support provided by administrators through technology support centers. In both cases, the missing link appears to be a lack of appreciation for the benefits of instructional design principles. This is particularly more so in an era where collaboration between instructional designers and subject matter experts has almost disappeared. The need for the inclusion of instructional design principles for in-service and pre-service teacher professional development is therefore evidenced.

Assisting faculty, regardless of their notions on teaching with technology, can remove barriers that impede the appropriate use of technology and thereby increase its effectiveness in blended learning environments (Jonassen & Easter, 2012). Technology is increasingly shaping how we learn and teach in the 21st century at a faster pace partly because it drives innovation in educational practice. For brick-and-mortar institutions, blended learning environments are a natural fit, as they complement traditional delivery methods and meet the needs of different types of learners.

With regard to outcome-based instruction, evidence from studies on the efficacy of traditional delivery versus blended or distance delivery indicates the former is no more beneficial than the latter (Simonson, 2011; Land & Hannafin, 2000). It seems reasonable, therefore, to focus on the appropriateness of technology use. Betrus (2008) observed that “a shared focus of the field of educational technology remains on the appropriate use of emerging technological resources to facilitate learning and improve performance” (p. 238). As such, it is the limited use or non-use of CMS features by faculty which can impair its effectiveness as a learning environment and consequently compromise its potential to enrich learners’ experiences.

TEACHER BELIEF

To begin with, university and college faculty for the most part have no say in which CMS their institution chooses for them. Administrators may choose particular technologies based on financial reasons (Hall, 2010) while faculty may choose to integrate such technologies based on convenience (Surry & Land, 2000). As a consequence, faculty may feel compelled (pushed but not ordered) to use CMS as directed by administrators. This can lead to ineffective use of CMS which results in undesirable learning outcomes and can frustrate learners and instructors alike (Hirumi & Kidney, 2011). More so, ineffective or inappropriate use of CMS translates into missed opportunities to capitalize on improved forms of delivery. Perhaps for such reasons, the capacity of teachers as individuals and as a group to adapt and implement technological innovations at an optimal level has been a focus of several research studies which have resulted in the proposal of several models...
on the process of effective implementation for increased learning outcomes (Jonassen & Land, 2012; Hirumi & Kidney, 2011; Pollard, 2005).

A focus on changing teacher belief resides in the comparison of the fundamental aspects of teaching and learning between traditional and blended learning environments and the associated modification of behaviors that are necessary (Power, 2014). In addition, evidence of desirable learning outcomes from distance education need to be a part of the conversation, as faculty who believe in the efficacy of traditional face-to-face instruction do not see the advantages of technology-mediated instruction. As a result, some teachers still prefer the physical presence of learners and the direct interaction that results from it (Simonson, 2011). Repurposing instruction for the distance aspect of delivery and facilitation for blended delivery may therefore not appeal to them, including the fact that the current generation of learners prefer to learn and communicate differently from traditional practice. Such beliefs are at the core of faculty resistance to transition from face-to-face to blended environments.

**FACULTY RESISTANCE TO CHANGE**

Two factors affecting the appropriate use of technology in education that highlight this chapter are faculty resistance to change and the need for alternative forms of appropriate support in the utilization of CMS for blended instructional delivery (Jonassen & Land, 2000; Reigeluth, 1999; Januszewski & Molenda, 2008). Faculty resistance to change is an endearing reason for the underuse of technology (Simonson, 2011). Such faculty are therefore likely to utilize CMS mainly as a repository of learning materials and for convenient access by their students (Heinich, 2011).

Faculty who resist change discount the benefits of distance education, partly because they fail to see how effective instruction can take place outside of the physical classroom where the learner and teacher are separate (Simonson, 2011). Those faculty fail to see that learning experiences supersede that of mastering goals and objectives (Tessmer, 1998). As a consequence, the role of technology as an enabler of teaching and learning is dismissed. For reasons such as this, it is necessary to include relevant theoretical frameworks that support and validate the appropriate use of technological tools in a CMS, as part of faculty professional development on technology integration.

Rogers’ (2003) classic analysis of how people adopt innovations is relevant to this discussion in that he describes instances affecting such adoption that are relevant to the adoption and appropriate integration of CMS for blended delivery. The first instant is that of time. The literature is replete with arguments that time is a constraining factor that impedes the appropriate application of technology. Although universities and colleges provide technology centers and personnel to assist faculty (Heinich, 2011; Betrus, 2008), not all faculty members take advantage of such resources. Rogers’ (2003, p. 20) analysis of time as an impeding factor in the adoption of an innovation is applicable to the adoption of CMS but even more complicated because it is not rejected outright but used inappropriately at various stages and dimensions. Faculty adopt CMS at varying rates with varying quality. So even though numbers may paint a bright picture, in terms of faculty who use a CMS on a given campus, the quality of adoption may not. Resistance, as such, therefore relates to several variables besides time, as Rogers’ (2003) indicated.

Knowledge and attitudes toward an innovation such as CMS use is another factor that aligns with the resistance to use CMS for blended delivery. According to Rogers (2003), “knowledge” (learning about and understanding how it works), “persuasion” (whether an individual is convinced or not of the innovation), “decision” (activities leading to adoption or rejection), “implementation” (putting an innovation to use), and “confirmation” (seeking reinforcement to improve quality of use) may
work in sequence, as a process of innovation (p. 20). However, for faculty, such a sequence may not occur. “Conflicting messages” may occur sooner, even though the adopter wants to use it but does not have the expertise to make it happen. The certainty that faculty need in order to fully adopt a CMS is sometimes lacking. In such a case, the advantages of the innovation are not fully conveyed because thought-process was not a part of the professional development PD process, if that indeed took place.

ALTERNATIVE SUPPORT FOR FACULTY

The second discussion in the literature that informs this chapter is that of the provision of PD on CMS integration. There is a need for faculty PD frameworks to shift from a predominant focus on how to apply technological tools to that of first assisting faculty understand the utility of CMS tools and their inherent benefits over traditional delivery methods. Only by first understanding the benefits of each tool for instruction, can faculty then become stakeholders and want to learn their application.

While universities and colleges provide technology centers and personnel to assist faculty members with technology use (Heinich, 2011; Betrus, 2008), the necessary changes in instructional practice required for the optimal implementation of this new framework for teaching and learning, which Abel, Brown, and Suess (2013, p. 1) describe as “a new architecture for learning” has been undermined, partly leading to or reinforcing faculty resistance. Some faculty view the time associated with taking advantage of these resources as a constraint. The need for continued efforts to hypothesize strategies for instructional improvement and to conduct research and intervention to achieve such (Richey & Morrison, 2011) is therefore necessary.

In the race to join the for-profit higher education sector in the virtual delivery of education, traditional brick-and-mortar institutions will serve their students well, if not better, by re-envisioning how to effectively assist faculty embrace CMS technology just as online learning rethinks areas for improvement (Bowen, 2013). Such a focus would reside in the design, delivery, mediation, and assessment of learning materials and technological tools that have been proven to enhance student learning outcomes. This can be achieved through “sound design principles” in how content is organized for distance delivery (Mohammed, 2004, p. 2). Existing frameworks for best practices such as design principles found in Danielson (2007) and the Quality Matters Rubric, for example, are not fully exploited to improve course design. By understanding alternative methods, faculty can embrace options that work for them. Such an effort would also go beyond current predominant practice of simply providing virtual platforms such as CMS and expecting faculty to adapt.

The time has never been more pressing, but yet ripe, for higher education faculty to become more comfortable with exploring and using available technology, especially through CMS, for alternative technology-mediated instruction because it can be more effective in reaching college students. Yet the factors that impeded distance education in the past, as documented by Simonson (2011) persist and confound the appropriate adoption and integration of blended delivery in the 21st century.

First, faculty have to be convinced that teaching a blended course requires a paradigm shift in the conceptual framework that guides traditional planning and delivery of instruction. This requires behavioral change toward embracing the fact that instructional delivery will involve face-to-face instruction and facilitation as well as distance guidance and communication. Faculty who are already enthusiastic about the benefits of blended delivery and have varying degrees of experience, would require PD that focuses on optimizing CMS
integration. That form of assistance resides in elevating the knowledge base. For faculty who dismiss blended instructional delivery, it requires PD that will distinguish traditional face-to-face instructional practice from blended delivery. For this group of faculty, the practical demands of added time and work required for planning, organizing, designing and delivery of content (Simonson, 2011) for blended instruction is a significant consideration.

Two impeding factors, among others, play a fundamental role that affect the optimal or appropriate use of CMS for instructional delivery. First, is the critical role that faculty support systems on technology use (i.e., technology support centers, deans, heads of department, and administrators) need to play to assist faculty transition from a belief in traditional face-to-face delivery to that of technology-mediated delivery. The second factor resides in practical alternative approaches that are faculty-centered and data-driven.

LIMITATIONS OF A ONE-SIZE-FITS-ALL PD APPROACH

Technology centers that assist faculty on blended and online course development have the tendency to focus on a one-size-fits-all approach to their faculty development programs. Although teaching faculty on how to implement CMS tools (usually the basic ones) is necessary, that manner of approach requires revision. Typically, technology centers provide a calendar on topics that will be covered each week or month during each school term. Such instruction and activities are usually focused on assisting faculty navigate and apply CMS tools. In addition, technology centers are also open for consultation with faculty on their varying needs. In spite of these accommodations, time to devote to learning and or improving instructional design for delivery remains a key confounding factor that impedes faculty ability to attend training workshops (Heinich, 2011; Betrus, 2008). Conflicts with instructional time and preparation impede faculty attendance of such workshops. As such, faculty only go to technology support centers physically or call for assistance via phone when the need arises.

Although technology support centers are undergoing transformation due to faculty demands and input, much still remains to be done to make faculty stakeholders of appropriate technology use. Much of these changes reside in first making faculty stakeholders of the benefits of the appropriate use of technology tools in CMS over traditional instructional methods. This will involve a process of diffusion (Rogers, 2003) whereby faculty at various stages of CMS tool use can observe demonstrations on tools and their inherent variations with specific emphasis on differing circumstance of use based on learning objectives and the pedagogical underpinnings of such use. Faculty exposure to relevant pedagogical frameworks and theories that justify the selection of CMS tools is likely to appeal to them. Every CMS has tools with variations that can serve the needs of different types and levels of learners, for example. Abel (2013) has noted how a particular use of technology can be appropriate for foundational courses or concepts but not suitable for advanced courses or concepts. An example is the use of the “Q & A” choice for discussion forums for upper division or graduate courses in favor of other options in Moodle because that particular option requires that students first post their discussion before they can see other posts. Therefore, it is by understanding the rationale for the utility of each tool that faculty are then likely to embrace and try them out. In order for this to occur, however, it would require technology support personnel who are not only knowledgeable in how the tools of a CMS works but conversant in the different circumstances of appropriate use in order to persuade such utility. When faculty are exposed to the differing functions of CMS technology tools, especially with regard to the attainment of desirable learning outcomes, skepticism on the
value of technology for teaching and learning is more likely to change. This type of support for faculty can also lead to collaboration and useful feedback to administrators on what works and what does not.

The analysis here is that if, for instance, faculty only go to technology centers to get assistance with uploading syllabi and course materials at the beginning of the term, and pay another visit to learn how to enter grades at mid-term or toward the end of term, then what perpetuates is that faculty are not even aware of the other beneficial tools in a CMS that could enhance teaching and learning and make them become more learner-centered. If technology support staff are not familiar with pedagogical frameworks and their relevance to CMS tools, they fail to promote optimal use by not making the case for links between the two and why their utility in certain circumstances provide more desirable results over traditional face-to-face practice. As a consequence, “the concepts and principles related to ‘using technological resources’” as explained by Molenda (2008, pp. 141-156) get undermined.

For this reason, it is necessary for some technology support personnel to be trained in the pedagogical rationale for the utility of CMS tools to provide initial training that will then be complement by training on tool implementation.

The second reason why technology support personnel need to go to faculty at their own departments is that colleges and departments in any given institution will have differing needs even on the same CMS. Even where such needs do not vary much, faculty exposure to relevant pedagogical frameworks and theories that justify the selection of CMS tools could influence improved application significantly. For example, faculty within a college or department of education can be expected to be knowledgeable in learning theory and its role in education, instructional alignment principles, and the philosophy of being learner centered as compared to faculty in other disciplines because the former receive training in writing goals and objectives, in addition to frameworks for designing instruction. This is in part because the former is expected to teach these skills to pre-service teachers as part of their curriculum. Such faculty are therefore more likely to embrace more appropriate tools in a CMS whereas faculty who are not immersed in learning theory and its practical relevance to CMS may become content with utilizing tools that only provide the convenience of a repository for course materials.

Faculty are subject matter experts but they may lack the complementary expertise to select appropriate CMS tools that can best meet the pedagogical needs of instruction (Gentry, 2011). As such, it would require technology support staff who are not only knowledgeable in guiding faculty on how to navigation the various tools in a CMS but in addition, be knowledgeable in the practical applications of learning theory, including andragogy.

A quick exposure of faculty, where necessary, to the differing utilities of a CMS tool that reflect perceived differences or intersections between the behaviorist and cognitivist perspectives versus the constructivist perspectives (Molenda, 2008), for example, have implications for appropriateness of use. In addition, such choice of use reflects the difference between teacher-centered practice which is predominant in traditional delivery versus the constructivist perspective which is learner-centered and which appropriate use of CMS tools tends to espouse. Understanding the different types of use for one CMS tool therefore lays the foundation for appropriateness of choices based on faculty content management. It is the manner of content management with a CMS which establishes the difference between traditional delivery practices and learner-centered, technology-directed practice. Providing answers to the following questions by an instructor who uses a CMS for instructional delivery puts this analogy in perspective:
Optimizing Blended Teaching and Learning in Brick-and-Mortar Institutions

- Is there alignment between course objectives and utility of choice tools?
- Is there evidence of interactive opportunities for learners to make meaning?
- Is faculty optimizing use of tools based on manner of use? Where is the evidence?
- How does the material gain or maintain the learner’s attention with regard to interactivity?
- How is productive feedback provided?

ALTERNATIVE APPROACHES FOR CMS USE

The following processes for appropriate tool use are available, however, it would take their implementation by technology support centers for success to happen. First, it is necessary to identify the baseline of CMS tools and their inherent variations in order to foreground their use. Such identification should go beyond ordinary practice such as how to add an activity, file or folder to a course, setting up quizzes, using grade book or adding a discussion forum. Different ways of utilizing a tool through its variations should first be established. Following this, it would be appropriate to verify tools that faculty actually use. Utilizing Hall’s (2010) innovation configuration mapping concept, for example, can place faculty with regard to current use of CMS tools and therefore, form the basis for providing appropriate and effective assistance toward optimal use. Such a framework would help to explore faculty integration of CMS to: (a) describe the manner of use; (b) choice processes; and (c) faculty perceptions of optimal use (i.e., how they think they utilize CMS resources). Such theoretical/pedagogical rationales for CMS tool selection and alignment reflects views of best practices (Heinich, 2011; Betrus, 2008).

Professional development training workshops on selecting CMS resources based on performance objectives and established learning outcomes would provide faculty with opportunities for a focused examination of their CMS course sites and help to validate any alternative recommendations for resource selection. Such an approach is also likely to win faculty receptivity to alternative resource utility and integration. Effects of such efforts by technology support centers would also lead to data-driven information on faculty choice selection of CMS tools and provide accurate information on barriers, concerns, and constraints that impede optimal implementation of technology tools, and register impacts of PD on appropriate CMS use for learner-centered instruction. Also, by identifying and classifying faculty use of each CMS tools and their variation of use, it is possible to collect data that would verify individual as well as general faculty use for analysis. The analysis of such would also provide data for the comparison of CMS tool use from one school term or year to another, for noticeable differences, especially for faculty who teach the same course(s) with such frequency. This practice will also make it possible for the type of feedback interactions at a micro level that Jacobsen and Kapur (2011, p. 304) discuss with regard to theoretical application of learning environments.

CONCLUSION

A significant body of students who are immersed in information technology populates traditional brick-and-mortar universities and colleges. Technology and modern media have shaped the environment that this generation of learners live in. The efficient and reliable technological devices and associated software afford this generation a latitude and convenience to communicate, access information and interact at unprecedented rates. Universities and colleges, in response to the need to provide technology-mediated environments to support learning, have generally embraced CMS to optimize learning (Nycz & Cohen, 2007). However, faculty in post-secondary institutions provide technology-mediated platforms such as
CMS to support blended learning, faculty are yet to utilize CMS tools appropriately to enhance learning and increase learning outcomes. As a result, their lives are driven by mobile devices which they largely use within the context of social media. Consequently, technology, with particular regard to blended delivery in particular and online learning in general, provides opportunities that also pose problems. It appears that the problem lies in how to connect with, not discourage the social connections that students have with their world (Abel, Brown, & Suess, 2014). In spite of these inherent problems, many (Bowen, 2013; Carr-Chellman, 2011; Chen & Denoyelles, 2013) are optimistic about the appropriate use of technology to increase learning outcomes that reflect the needs of our society today.

For brick-and-mortar institutions of higher education, it means taking advantage of alternative delivery methods to serve students who are physically on campus as well as those who choose to study from distance. The key to success for these traditional institutions is to focus on assisting faculty design courses that are student-centered that also meet “best practices” with their stipulated CMS. Designing and delivering instruction for traditional teaching and learning environments are different from that of blended environments. The paradigm shift in assisting higher education faculty transition from traditional to blended environments is to empower instructors with the necessary resources and incentives to take ownership of technology-mediated instructional design as they do with their traditional processes (Carr-Chellman, 2011).

Blended environments provide opportunities for brick-and-mortar institutions to expand their student outreach through optimal assistance to faculty. The focus must be on how to increase the number of students who succeed through the achievement of desirable learning outcomes. For this to occur there is a need to go beyond the traditional face-to-face learning environment alone.

The mantra must be that “A” students are made and not born. For this to be realized, it means that traditional delivery modalities alone will not assist in this endeavor. The increasing success of distance learning, and as an emerging force in education, must not be lost in the current debate on MOOCs. Heed must be paid to students as consumers, for they will ultimately decide where to pursue their education. For brick-and-mortar institutions, technology is not a threat if faculty are properly assisted on the appropriate use of technology-mediated blended environments. The actual and potential benefit of students depends on how faculty have been prepared to utilize blended environments for learner-centered instructional delivery and facilitation to achieve desirable learning outcomes.

REFERENCES


**KEY TERMS AND DEFINITIONS**

**Adoption:** The process or act of using something new.

**Blended Instruction:** The combination of traditional face-to-face with online instruction.

**Course Management System (CMS):** The utilization of technology platforms for the delivery and assessment of learning. This is synonymous with Learning Management System (LMS).

**Instructional Design:** A framework for organizing instructional content.

**Instructional Technology:** The utilization of technological tools to assist learning. Synonymous with educational technology.

**Learning Environment:** Conditions that influence the acquisition of knowledge, skills and attitudes or their improvement.

**Optimize:** Increasing outcome to high level(s) as possible.

**Professional Development:** Assistance provided to an individual or group of people that leads to growth and enhancement in their work.

**Technology Tools:** Applications within a Course Management System (CMS) for selection and implementation.
Chapter 2
Utilizing Learning Management System (LMS) Tools to Achieve Differentiated Instruction

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ABSTRACT
Students bring their own knowledge, experiences, and personal interests to brick-and-mortar and virtual classrooms. When instructional strategies and learning activities are developed based on prior knowledge, experiences, and personal interests, the instruction is a form of differentiation. This chapter discusses how Learning Management Systems (LMSs) can help teachers and instructors achieve differentiated instruction that meets individual needs. There are two important implications of differentiated instruction: (a) lessons are tailored to meet individual and diverse student needs, and (b) lessons cannot be planned without knowledge about who the learners are. When taking into consideration that teaching is tailored to meet individual needs, it becomes apparent that differentiated instruction means more work for the teacher or instructor. It also means the teacher or instructor has to continually change learning activities and is not able to use handy pre-designed ones because student progress or lack of progress informs teaching strategies. This chapter argues that differentiated instruction is worth the time and effort because it responds to individual needs, and responsive teaching maximizes each student’s success.

SETTING THE SCENE
Each student comes to class with different skills, prior knowledge, and experiences, yet curriculum developers, teachers, parents, and school administrators expect all students to meet the same learning outcomes. Apart from students who have learning disabilities or special needs with modified and adapted programs, students in a class are expected to perform the same skills, grasp the same concepts, solve the same problems, and critically think about the same topics. Teachers and instructors must find ways to cover the curriculum and ensure all students meet the prescribed learning objectives for the subject or course. However, this blanket approach should not be the focal point of instruction. Instruction needs to enhance learning for each student. Differentiated instruction can
Utilizing Learning Management System (LMS) Tools to Achieve Differentiated Instruction

help teachers and instructors achieve this because it supports effective teaching and student learning. The following scenarios support this argument.

Scenario 1

A university professor in the faculty of education teaches a course called Mathematics for Elementary Teachers. The students are third-year undergraduates, and the course is required for graduation. The professor gives the students the previous year’s final exam on the first day of class, and explains that the exam mark will not count towards the final course mark, but the results will help in the design of the term lessons. After collecting the exams, the instructor explains that any student who scores 88 percent or higher on the exam would be exempted from attending classes, completing class assignments, and completing the midterm exam. The only requirement for these students would be to complete the final exam at the end of the term. The instructor tells the students that the course is a refresher because the content covers mathematics for grades 5 to 10. He concludes with these words: “Students should not be required to sit through a full semester in a class that teaches them nothing.”

In this scenario, the professor assesses prior knowledge and then groups the students into two groups; one group is required to attend classes (lessons designed to meet their needs), and the other group is exempted from this requirement (no lessons needed). This instructor differentiates instruction, and student needs are met.

Scenario 2

Another instructor, teaching the same course, Mathematics for Elementary Teachers, begins his lessons on the first day of class. He does not assess prior knowledge, and requires all students attend his classes. He tells the students he thinks all students should be treated equally. Everyone must attend all classes and complete all term assignments and the midterm and final exams. During one of his weekly lectures, he discovers a student doing a history assignment. The student is not engaged in his lesson, and is content to work on another course. The irritated professor puts the student on the spot and calls him to solve a complex, Grade 10, math equation on the board in front of the class. The student gets up, solves the problem with ease, and returns to his chair. The student attends classes because it is a requirement, not a necessity. He does not need the lessons because he has already mastered the content being taught.

In this scenario, the instructor does not take prior knowledge into consideration and uses a one-size-fits-all instructional strategy. This approach reaps a very different outcome: student needs are not met. Does differentiation make more sense?

INTRODUCTION

Differentiated instruction is a common sense practice because it responds to student needs. According to Reigeluth and Carr-Chellman (2009), “it is a waste of human potential to make some students wait for the rest of the class after they have learned what was being studied, just as it is a waste to make some students move on before they have learned it” (p. 391). Students should not have to sit through a lecture about content they have already mastered. Instead, this time should be spent building on that prior knowledge. This is what differentiated instruction does. It allows for the best use of instructional time because instructional activities are selected and designed based on student readiness, not based on curriculum requirements. Paterson, Schneidler, and Williamson (1938) state, “Ideally, the highest aim of education is to obtain a full understanding of each student in order to adjust educational offerings to his needs so that he may be prepared for a role wherein highest achievement and satisfaction may be realized” (p. 1). Differentiated instruction
Utilizing Learning Management System (LMS) Tools to Achieve Differentiated Instruction

is based on an important point Paterson et al. (1938) make: education must respond to individual differences.

There are no specific, step-by-step instructions on how teachers or instructors differentiate instruction. Therefore, it is important to understand what differentiated instruction isn’t. Tomlinson (2000a) states that “differentiation is not a recipe for teaching nor is it an instructional strategy” (p. 6) and also refers to differentiated instruction as a teaching philosophy. A teacher or instructor may subscribe to a particular teaching philosophy that fosters inflexible instructional strategies. For example, the teacher or instructor who does not assess prior knowledge subscribes to a one-for-all teaching philosophy: one instructional strategy, plan, learning activity, and assessment for all students. The teacher or instructor who assesses prior knowledge subscribes to a what-is-appropriate teaching philosophy: (a) what does the student already know? and (b) what is the next appropriate activity? The instructor in Scenario 1 uses formative assessment to find out what students already know (prior knowledge) and determines (or differentiates) the next appropriate activity based on this information. The instructor plans teaching activities based on what the students need. Albeit this is an extreme example, the important point here is that teaching in response to student needs is fundamental to effective teaching and student learning.

Laurillard (2012) states that we must consider what students themselves bring to learning when considering the wider context of what formal teaching must achieve.

In all educational sectors, knowing who our students are, and what they need from our teaching, has become so challenging that the hard-pressed teacher, busy with the task of continually renewing and updating the curriculum, tends to trust to the intelligence and motivation of the students themselves to construct the bridge between what they bring to their studies and where their studies are taking them. (pp. 26–27)

Differentiated instruction gives the role of “bridging gaps” back to the teacher or instructor. Even in virtual learning environments, teachers and instructors can bridge gaps between previous knowledge and new knowledge. Educational technology makes this possible. Teachers and instructors can differentiate instruction in blended and online environments using a learning management system (LMS).

An LMS is educational software that serves multiple functions, including course management, administration, tracking, and reporting. It is not only useful for delivery of content and assessments but also provides asynchronous and synchronous opportunities for interaction and collaboration. Pirotrowski (2010) identifies six activities of an LMS: creation, organization, delivery, communication, collaboration, and assessment. Some examples of LMSs include Blackboard, Moodle, Desire2Learn, and Angel. A more detailed definition of LMSs is provided later in this chapter. LMS tools enable teachers and instructors to differentiate learning activities according to each student’s needs. Differentiated instruction is possible “through the monitoring of each student’s achievement as they progress through the course content within a Learning Management System (LMS)” (Atkins, O’Connor, & Rowe, 2007, p. 20). According to Tomlinson & Eidson (2003), differentiated instruction “stems from a teacher’s solid (and growing) understanding of how teaching and learning occur, and it responds to varied learners’ needs for more structure or more independence, more practice or greater challenge, a more active or less active approach to learning” (p. 3). Essentially, “differentiated teaching is responsive teaching” (p. 2).

Differentiated instruction is based on the acknowledgement of three important areas: student
readiness, interests, and learning style preferences. Student readiness is the focus of the following discussions and arguments, but this chapter does not (a) discuss various types of student interests or explain how to assess student interests, (b) explain or discuss the different types of learning style preferences, or (c) provide arguments to support or discount the debate about whether or not learning styles exist.

“Differentiation according to student interest involves the purposeful use of course content; instructional processes, end products and/or classroom environments that attend to the particular interests of the student” (Takahashi, 2013, para. 1). Lum (2009) makes the distinction between learning styles (information-processing activities) and learning preferences (individual choices of one particular mode of learning over others). An investigation of differentiation based on interests and learning style preferences is beyond the scope of this chapter. Differentiation based on readiness is central to the discussion here, and so a clear definition of readiness is provided.

Readiness is defined as “a student’s current understanding and knowledge towards a unit or topic of study” (Takahashi, 2013, para. 1). An instructor who uses differentiated instruction must assess student readiness to find out what students already know about the subject matter. Students build on or connect new learning to their existing knowledge base. Hence, an assessment of prior knowledge allows the teacher or instructor to identify the gap (if any) between what the student already knows (old knowledge) and what the student needs to learn (new knowledge). However, assessing prior knowledge cannot be done in isolation of a number of other considerations, including language, culture, and even race. Laurillard (2012) identifies six student characteristics that affect how students interact in the learning environment: previous knowledge, self-confidence, abilities and motives, conceptions of knowledge and learning, approaches to learning and studying, and expectations. It is not expected that teachers or instructors assess all of these areas, but an effective teacher will be aware of the fact that a wide span of other attributes contribute to the development of student needs, interests, and experiences. Further to this, some students are visual learners, some work better in groups than others, and some require direct instruction while others are better able to learn through inquiry. It is important not only that teachers and instructors are aware of the differences that students bring but also that they provide a flexible teaching approach that permits all students to learn. This chapter provides evidence to support the following claims:

- Differentiated instruction enhances student learning.
- LMS tools can help teachers deliver differentiated instruction.
- Internal and external barriers prevent effective use of LMS tools when delivering differentiated instruction.

Differentiated Instruction and Effective Teaching and Student Learning

There is a myriad of instructional approaches that teachers can use in face-to-face, blended, and online environments. Reigeluth and Carr-Chellman (2009) identify sixteen different instructional approaches. Some of these include case-based learning, direct instruction, drill and practice, hands-on learning, anchored instruction, learner centered instruction, problem-based instruction, and project-based instruction. Laurillard (2012) focuses on acquisition, inquiry, discussion, and collaborative approaches. While an investigation into the different types of instructional approaches is beyond the focus of this chapter, any instructional approach can utilize principles of differentiation. A teacher or instructor uses differentiated instruction when frequent formative assessments guide their instructional process to enhance learning. Simply put, differentiated instruction calls
for frequent formative assessments that inform instruction. These formative assessments serve a twofold purpose; they provide information on prior knowledge and information about students’ understanding of the concept being assessed. The information provided by the assessment is used to determine what kinds of learning activities the student should be given next.

Teachers and instructors ask two very important questions when considering a differentiated model. Is the time and effort worth it? Do students benefit from differentiation? Before answers to these questions are discussed, several key points for teachers and instructors must be considered. The first point is that students do not come into the classroom (bricks-and-mortar or virtual) with the same level of understanding and skills. According to Laurillard (2012), “students bring their motivations, knowledge, and skills to their learning activities, which help to define their personal goals, although these may vary across different courses, given their background and the nature of the course” (p. 64). The second point is that the goal of the teacher or instructor is “to maximize the capacity of each learner by teaching in ways that help all learners bridge gaps in understanding and skill and help each learner grow as much and as quickly as he or she can” (Tomlinson & Eidson, 2003, p. 2). Too often, teachers and instructors focus on covering the curriculum, collecting assignment scores, and calculating final marks. Differentiation forces teachers and instructors to focus on enhancing student learning. However, the reality is that time, institutional priorities, and demands of an ever-increasing curriculum can prevent teachers and instructors from providing the best teaching strategies and learning opportunities for students. On the other hand, the teacher or instructor who “emphasizes assessment to inform instruction understands that only by staying close to student progress can he or she guide student success” (Tomlinson, 2008b, p. 7). Further, Taka-

hashi (2013) states, “When we differentiate tasks according to a student’s readiness we are creating tasks that are a closer match to a student’s skill level and understanding of the topic” (para. 2).

When student success and student learning are given priority over simply covering the curriculum, the process of teaching and learning is rewarding for both students and teachers. Differentiated instruction, although it is not a teaching strategy but a teaching philosophy, puts student success and student learning first. Is the time and effort worth it? Do students benefit from differentiation? The answer to both of these questions is yes. Atkins, O’Connor, and Rowe (2007) report that differentiation enhances student learning, increases knowledge of individual student achievement, and increases teachers’ knowledge of the next appropriate activity for teaching and learning through the students’ interaction with the course materials as presented via the LMS.

**LMS TOOLS AND DIFFERENTIATED INSTRUCTION**

Learning management systems (LMSs) are not always viewed in a positive way, and some teachers and instructors feel these systems can be a problem. According to Anderson and Dron (2011), an LMS that “sees the world in terms of courses and content will strongly encourage pedagogies that fit that model and constrain those that lack content and do not fit a content-driven course model” (para. 3). Hawryszkiewycz (2004) states that LMSs “are passive in the sense that they require instructional material to be set up by instructors. Learners access these materials and use them in ways specified by the instructors. Such systems generally support instructor-directed classroom learning” (p. 348). While LMSs are used to facilitate inflexible, content-driven, teacher-centered instructional approaches, research supports that
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these systems do promote instructional approaches that enhance student learning. Evidence of this claim is provided in the paragraphs that follow.

According to Atkins et al. (2007), effective use of an LMS can enhance student learning and achieve differentiated instruction. Also, Hodgson (2010) states, “Educators can promote innovative practice via an LMS such as WebCT (now Blackboard, www.blackboard.com), FirstClass (www.firstclass.com) or Moodle (www.moodle.org)” (p. 52). LMSs give immediate feedback to students via auto-marked quizzes, and they provide opportunities for communication via discussion forums. These would not have been possible in the traditional correspondence generation (print era) of distance education. Today, advocates for differentiated instruction can promote its use in online and blended environments because frequent formative assessments can be administered using LMS tools.

While differentiated instruction requires the teacher or instructor to conduct formative assessments on an ongoing basis within the course, measurement of what the student knows is not intended simply for the purpose of reporting on the student’s progress (summative assessment) but for the purpose of selecting learning materials and activities that would improve student learning. As Takahashi (2013) states, “We can vary the pace, the level of complexity, degree of independence as well as the amount of support and structure” (para. 4). The student would receive remedial materials if required or advanced materials if appropriate. For example, The Learning Federation (TLF) for Australian and New Zealand schools customized the LMS to allow for differentiated instruction “so that the sequence in which course content delivered to students was dependent on their performance on integrated assessment components” (Atkins et al., 2007, p. 21). The point of the assessment is to identify what the student needs next. Atkins et al. (2007) uses pre-tests and post-tests that match specific learning outcomes as formative assessment that identifies appropriate learning activities for each student. These formative assessments are done within the LMS called Moodle, and “active web links direct the student to the appropriate content based on the quiz results” (p. 23).

The qualitative study by Atkins et al. (2007) indicates that the time, effort, and cost associated with differentiated instruction are justified. Their study included over 20 classrooms and about 500 students enrolled in Lunar Cycles (Science, Year 6) and Introduction to Algebra (Mathematics, Year 9). Another study by Tomlinson, Brimijoin, & Narvaez (2008) shows that teachers at Conway Elementary School considered “the most significant outcome of the decision in 2000 to embark on the journey toward differentiation was that teachers began seeing students as the engine that drives the teaching-learning cycle” (p. 147). Tomlinson et al. (2008) also present a snapshot of the change process for Colchester High School and report that an entire high school’s psyche and pedagogy changed as a result of differentiation; discourse between students and teachers increased, and, as a result, “a sense of community evolved, [and] members of student government began working with faculty and administrators” (p.177).

Differentiation can be successful within a virtual or online classroom environment when LMS tools are used effectively. Paulsen (2003) argues that “much of the success of e-learning can be attributed to the availability of Learning Management Systems (LMSs), also known as Virtual Learning Environments (VLEs) or learning platforms” (p.134). Mahdavi and Khoobkar (2010) describe LMSs as systems that can be used to plan, implement, and assess a specific learning process. Studies show that post-secondary institutions are using LMSs to support instruction (Christie & Jurado, 2008; Ellis & Calvo, 2007; Paulsen, 2003).
LMSs are not learning repositories, although they have this capability. They are educational software systems designed to enhance student learning and improve instruction, and, according to Reigeluth and Carr-Chellman (2009), “instruction is anything that is done purposely to facilitate learning” (p. 6).

K–12 online schools and brick-and-mortar schools are using LMSs to deliver instructional materials to students. Just because universities and K–12 schools provide these systems to teachers and instructors, it does not mean one can assume that (a) teachers and instructors use the systems effectively and (b) the systems improve student learning. According to Hannum, Banks, and Farmer (2009), rural high schools use LMSs to resolve the issue of teacher shortage and to offer comprehensive curriculum.

At this point, it is important to highlight that LMSs are being used to support both campus-based and online instruction: “No longer is the use of information and communication technologies (ICTs) that facilitate distance learning restricted to universities that have a mission to educate at a distance” (Ellis & Calvo, 2007, p. 60). Convergence between classroom public education and distance education in public schools can be dated back to the early 1990’s (McKinnon, 1995). ICTs are being used not only in distance education delivery but also in all different types of instructional settings to support instruction. According to Crawley and Frey (2010) “these technologies provide the opportunity to enhance the learning environment in face-to-face courses as well as distance courses” (p. 137).

Specifically, “the use of an online learning management system such as WebCT, Blackboard, or dotLRN to support campus-based learning experiences is an increasingly widespread international phenomenon in higher education” (Ellis & Calvo, 2007, p. 60). Effective use of LMS tools helps teachers and instructors to differentiate instruction and, at the same time, each student’s needs are met.

Using LMS Tools for Differentiated Instruction

Since LMSs are increasingly being used, it is logical to assume that research about the use of these systems is of interest to stakeholders—students, teachers, parents, faculty members, and institution administrators. Furthermore, knowledge about how these systems can be used to improve student learning and student success is very relevant to the teachers and instructors who use them. The use of LMS tools to achieve differentiated instruction should be pertinent to brick-and-mortar delivery models (including blended models) and also to online environments: pertinent because differentiation responds to student needs, and, to maximize individual student potential, responsive teaching is essential. Technology provides the tools that allow responsive teaching to be realized, especially for large classes of 100 or more students. For example, LMSs provide teachers with automated assessment tools that can be used for formative assessment of extremely large classes. These automated assessments provide instant feedback to the learners, and do not increase workload for the teacher or instructor. LMS tools can help educators differentiate instruction, and this chapter shows how this can be achieved.

When LMS tools are used to differentiate instruction, students who require enrichment or remedial materials benefit. These students have the widest gap between what they bring and what they are expected to learn, and they are at a much higher risk of losing interest in their studies when their needs are not met. These students need flexible learning designs, and LMS tools can provide this. Mahdavi and Khoobkar (2010) refer to LMSs as Learning Activity Management Systems (LAMSs): “Learning Activity Management (LAM) systems are flexible learning design tools that enable instructors to organize and monitor learning activities of the learners. These activities include assignments, quizzes, and also collabo-
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Frey, Fuller, and Kuhne (2010) add, “With these new technology changes comes the responsibility of the educator to explore new teaching opportunities and understand the possibilities that can exist, being open to the changing and growing dynamics” (p. 13).

While it is possible for teachers to vary their teaching approach without the use of a LMS, it is reasonable to state that such a system can support a varied approach to teaching and learning. For example, an LMS allows teachers to use multimedia approaches to learning, including the use of words (spoken or written), and images (animated or still). Furthermore, LMS tools allow for differentiated instruction because each tool has a unique function. Collectively, the tools provide teachers and instructors with a wide span of assessment options (such as self, peer, group), presentation of content (including text, pictures, multimedia), and collaborative or individual learning activities (e.g., discussion forum, wiki, journal). A more detailed discussion about the varied kinds of LMS tools is provided later in this chapter.

When an LMS is used to support differentiation, teaching can be varied to meet the needs of students. However, teachers or instructors must use the system with the goal to enhance student learning. If enhancing student learning and student success is not fuelling the use of an LMS, it is more likely the system will be misused. For example, LMSs can be used to deliver inflexible teaching strategies that simply “push” content. Also, teachers and instructors become concerned about the vocational aspect (how to use the system) rather than the pedagogical aspect (how can learning occur with the system). According to a survey study by Weaver, Spratt, and Nair (2008), academic teachers were more concerned with technical aspects and workload issues, and students were more concerned with the quality of the online teaching, which was reflected in their perception that their teachers were not engaged with them in what they believed ought to have been an interactive learning environment (p. 41).

This study by Weaver et al. (2008) includes 1,314 students (response rate of 6.6 percent) and 96 academic staff (response rate of 3.8 percent), and it investigates the adoption and usage of the LMS (WebCT) at Monash University in Melbourne, Australia. The study concludes that “due to a perceived lack of institutional support and adequate resourcing, many staff are forced to adopt a teacher centered approach in their online teaching” (p. 41). Lack of support and resources impedes effective use of an LMS. Institutional support, training, technical support, and professional development that focus on online design, pedagogy and evaluation are very important to the successful use of LMSs. A discussion of barriers to the effective use of LMS tools is given in the latter part of this chapter.

This chapter provides evidence that LMSs are being used in face-to-face, blended, and online environments at both K–12 and post-secondary levels. But what does differentiation look like in an LMS in an online environment? This question is important especially when considering the implications of using LMSs in online environments. Shouldn’t online courses be designed from beginning to end? In most cases, online courses are developed from beginning to end. Instructional designers work with content specialists to develop online courses, and these courses are designed to have a finished product. The primary role of the instructional designer is to ensure an alignment of course objectives, learning activities, and assessments. The content specialist ensures the content is relevant, current, and meets the requirements of the curriculum and program of study. Does this model of design and development allow for differentiated instruction? Absolutely, any course can be differentiated if the person teaching, facilitating, or
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guiding the learners through the course materials conducts formative assessments and responds to the needs of the learners. However, institutional practice may prohibit this. For example, differentiated instruction is not possible if teachers and instructors are not permitted to edit their online course and if they are forced to deliver the course without the flexibility of adapting and changing it to meet the needs of the learners. What is conveyed about an institution that insists its teachers deliver pre-designed courses? It says that at the institutional, faculty, or program level, the focus is on covering curriculum rather than enhancing the learning experience for students. By contrast, Frey et al. (2010) state, “The concept of differentiating our instruction in the online teaching and learning environment means maximizing the learning opportunity for all students across a spectrum of curriculum and courses” (p. 2). To maximize learning opportunities, the teacher or instructor must first know what works for the student and what does not work for the student. This requires both an assessment of prior knowledge and also an awareness of other kinds of differences that each student brings, such as language, culture, and experiences. Delivery of a differentiated model requires a commitment from institutions, faculties, teachers, and instructors to respond to the needs of learners after formative assessments have been conducted.

Educators who want to ensure education is accessible to all, including students with mild to severe disabilities, may identify some similarities between differentiated instruction and universal design. The former can be compared to universal design, and some instructional designers use principles of universal design to ensure a course is inclusive. Universal design emerged from the disability rights movement, and its purpose is social inclusion, equality, and independence (Steinfeld & Maisel, 2012). Universal design and differentiated instruction are similar in that they both consider the needs of individual students. However, while universal design focuses on issues of accessibility and inclusion, differentiated instruction focuses on maximizing the potential of each student. Differentiation ensures the learning materials—i.e., content, activities, assignments, and assessments—are appropriate for bridging the gap between what students bring (readiness), and what content is taught. Even though a student might be able to access course materials easily and independently, materials might not be appropriate for any necessary learning, i.e. enrichment or remedial work. Therefore, universal design is not enough to ensure students develop to their fullest potential.

In summary, LMSs are being used to support instruction in all types of teaching and learning environments. LMS tools can be used to deliver a differentiated model that tailors lessons to meet individual needs. A discussion about how LMS tools can be used to achieve differentiated instruction and sample scenarios are presented in the following sections.

THE USES OF LMS TOOLS

Learning Management Systems (LMSs) are complex software systems that have a broad span of capabilities because an integrated set of tools is built into the systems. The integrated set of tools makes it possible for one system to perform all the tasks a distance learning system requires, including design, development, delivery, management, and administration of courses. A few examples of LMSs include Blackboard, Desire2Learn, and Moodle. According to Piña (2013), LMS tools can be divided into six categories: communication tools, productivity tools, student involvement tools, course delivery tools, content development tools, and administration tools. Piña (2013) identifies the tools within these categories as follows:
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- **Communication Tools:** Discussion forum, discussion management, file exchange, internal email, online journal/notes, real-time chat, and whiteboard.
- **Productivity Tools:** Bookmarks, calendar/progress review, searching within a course, work offline/synchronize, and orientation/help.
- **Student Involvement Tools:** Group work, community networking, and student portfolios.
- **Course Delivery Tools:** Test types, automated testing management, automated testing support, online marking tools, online grade book, course management, and student tracking.
- **Content Development Tools:** Accessibility compliance, content sharing or reuse, course templates, customized look and feel, instructional design tools, and instructional standards compliance.
- **Administrative Tools:** Authentication, course authorization, registration integration, and hosted services.

This section includes a discussion of three tools related to three of Piña’s (2013) six categories: discussion forum (communication tool), assessment types and automated tests (course delivery tool), and content sharing (content development tool). It is important to reiterate that differentiated instruction is not an instructional strategy but a teaching philosophy. Therefore, there are no step-by-step instructions on how to achieve it. This section of the chapter provides examples of how LMS tools can be used to achieve differentiated instruction. These examples are not to be taken as a definitive set of instructions. However, they provide sample scenarios that can deepen understanding of why differentiated instruction is important to effective teaching and student learning.

### 1. Discussion Forum

Discussion forums can be used to facilitate increased collaboration between students in online learning communities (OLCs). “OLCs are mostly formed around a shared interest or need, and are a powerful tool for building trust and relationships, for acquiring and exchanging knowledge, leading to more human Web environments” (Rigou, Sirmakessis, Stavrinoudis, & Xenos, 2007, p. 217). According to Rigou et al. (2007), “collaborative refers to systems enabling the collaboration of many learners within an OLC in order to complete a task that cannot be accomplished by a single learner” (p. 217). The discussion forum within the LMS allows students to participate in community-building via collaborative experiences. The LMS discussion forum allows discussions to be threaded so they can be organized by topic. Bernsteiner, Ostermann, & Staudinger (2010) describe how this discussion thread occurs:

> Usually, web forums are designed for the discussion of special topics. The forum is furthermore subdivided into sub-forums or sub-topics. Contributions to the discussion can be made and other people may read and/or respond to them. Several contributions to a single topic are called a thread (p. 181).

Threaded discussions should be used for communication activities that value process as well as product. Students benefit a great deal from the process of online discussions. They provide an opportunity for sharing ideas, critical thinking, and self-reflection, and they keep learners engaged within the learning community, especially when the discussions are critical in nature. Shedletsky (2010) states, “Whether labeled ‘discussion,’ ‘dialogue,’ or ‘conversation,’ the liveliest interactions...”
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are critical” (p. 250). According to Hakkarainen, Saarelainen, and Ruokamo (2009), “the capacity to collaborate is also highly valued in most professions, and institutions want to be able to demonstrate to employers that their graduates have these skills” (p. 39).

Discussion forums are asynchronous tools; that is, communication is not in real time. According to Bernsteiner et al. (2010), discussion forums are “made for communication” and so they are effective tools when used for the purpose for which they are designed. Teachers and instructors misuse the discussion tool when they use it for activities that can be completed by a single learner. For example, the discussion forum is used as a virtual picture frame when students are asked to post essays to the discussion forum without any expectation of a discussion to follow—that is, reading and commenting on someone else’s, or critiquing someone else’s post—The best use of the discussion tool is when it facilitates interaction between learners-to-learners and learners-to-instructor with the aim of promoting critical thinking and reflection. Discussion forums should not be used as a virtual bulletin board.

Discussion forums can be useful in the application of a differentiated model. Pallof and Pratt (2009) state that teachers and instructors should “promote, use, and assess learner contributions to the discussion board” (p. 48). In the application of differentiated instruction, the discussion tool could be used for formative assessment. For example, in the following sample scenario, assessment rubrics are not provided because the assessment is meant to inform instruction. Assessment rubrics would be required for summative assessment purposes. The following sample scenario illustrates how differentiated instruction can be achieved using the LMS threaded discussion tool. According to Shedletsky (2010), a discussion is “an alternately serious and playful effort by a group of two or more to share views and engage in mutual and reciprocal critique” (p. 249). The sample scenario exemplifies how students can share their views and engage in mutual and reciprocal critique. It also shows that discussion forums can be used for formative assessment for the purpose of differentiated instruction.

Sample Scenario

• Course: Family studies
• Topic: Fragile families
• Level: University undergraduate Year 2 (20 to 25 students)
• Learning Objective: Upon completion of the unit, students should be able to identify key characteristics of a fragile family.
• Formative Assessment: To assess prior knowledge and experience about fragile families, the instructor uses the following discussion forum activity for the purpose of identifying what students need next.
• Instructions to the Students: Our topic of study for this unit will be fragile families. Before completing the unit readings, we will participate in a discussion about the topic. The discussion will be open for the duration of Week 5. Complete the following:

Your Contribution

• Please post your answers to the following questions:
  ◦ What do you think are three key characteristics of a fragile family?
  ◦ Explain why you selected these three.
  ◦ Have you heard the term fragile family used in news reports, journal articles, books, or in your personal experiences?
• Your post should be a total of 150–250 words, using correct spelling and grammar.
• You do not need to support your response with citations.
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- Make your post by midweek to allow time for others to respond.

**Interaction with Others**

- Respond (50–100 words) to at least one other person’s posting that is either very similar to yours or very different from yours.
- Respond (50–100 words) to at least one student who has provided a response to your post (if no one responds to your post, respond to one more student of your choice).

**Differentiating the follow-up activity:** The teacher or instructor organizes three discussion forums. Students who have little or no knowledge about fragile families will work in Forum 1. Students who have some knowledge and experience with fragile families will work in Forum 2. Students who are extremely knowledgeable about fragile families will work in Forum 3. Students will be assigned to the appropriate forum based on their responses in the previous formative assessment. The three forums will provide differentiated instruction based on the needs of the learners. For example, students with little or no knowledge may be asked to watch a video that explains the characteristics of fragile families and then participate in a discussion about grouping the characteristics in some way. On the other hand, students who are very knowledgeable about the characteristics of fragile families may be asked to read sample scenarios where they have to evaluate whether a family is fragile and give explanations to support their evaluation. They would use the discussion forum to critique each other’s evaluation.

**Comments:** The follow-up activity has a two-fold purpose; it provides instruction that responds to the needs of the learners, and it is a formative assessment. After completing the discussion within the three assigned forums, the instructor could determine the next activity based on how students perform. This would have to be determined based on time constraints and based on student success or lack of student success. The learning objective in this scenario is the following: Upon completion of the unit, students should be able to identify key characteristics of a fragile family. Students in each discussion forum are expected to meet this outcome even though the learning activity for each forum is differentiated.

2. **Assessment Types and Automated Tests**

Effective use of LMS tools can help teachers perform a wide range of teaching tasks. Mahdavi and Khoobkar (2010) state, “Typically, a learning management system provides an instructor with a way to create and deliver content, monitor learners’ participation, and assess their performance” (p. 175). This section focuses on assessment of student performance for the purpose of differentiating instruction. It is important to remember that frequent formative assessments play an integral part in the application of differentiated instruction. Through the assessment of prior knowledge teachers and instructors are able to identify what learning materials would benefit each student most. Frequent assessment of large classes of 100 or more students can be extremely difficult for one instructor to manage, especially if the assessments take the form of 2,000-word essays, a common method of post-secondary assessment. Teachers and instructors with large class enrolments use multiple choice assessments to make their workload more manageable. LMSs have been used to auto-mark these multiple choice assessments and, as a result, have afforded teachers and instructors more time. However, Pallof and Pratt (2009) note,

As instructors are finding their way in the online environment and paying more attention to good course design and delivery, they are discovering that traditional forms of assessment of student

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work—such as tests and quizzes—that served them well in the face-to-face classroom may not work quite as well online. (p. 3)

Mahdavi and Khoobkar (2010) explain that technology can be used to conduct formative assessments.

Due to the increased number of students and classes in universities and other educational institutions, traditional assessment can be time consuming, difficult and error prone. Computer Aided Assessment (CAA) refers to the use of computer technology as part of the assessment process and is a rapidly developing research area as new technologies are harnessed. Assessing students' answers to a set of questions in order to either evaluate their ability or giving them instant feedback has become an important part of learning management systems. Assessment can be categorized as summative and formative assessment. Summative assessment is used to evaluate students and their ability over the learning material. Formative assessment is used to enhance students' learning by giving them immediate feedback. Formative assessment does not normally contribute in the marking process. (p. 182)

The assessment tools that are available in LMSs can cater to the needs of teachers and instructors who simply want to make their multiple choice, true/false, and matching assessments available online for the purpose of automated marking. However, this is not the best use of the tool. According to Palloff and Pratt (2009), performance assessments require students to create a product or demonstrate a skill that is connected to the learning process, and authentic assessments do not assess knowledge acquisition, but evaluate a student's ability to apply a skill in real-world situations. Within an LMS and using either an html editor or visual textbox editor, students can demonstrate their learning via performance and authentic assessments in a variety of ways. On the other hand, students could use other software to create or demonstrate learning and submit the assignment for marking to the LMS. For example, if a student had to create a spreadsheet in Excel to demonstrate how to calculate profit earned by a business, this Excel file could be submitted for marking in the LMS.

Before students complete performance or authentic assessments, teachers may need to provide scaffolding. Multiple choice and short answer assessments are useful for this purpose. However, teachers and instructors should not use computer-marked multiple choice assessments as the only form of summative assessment within a course. Students must be able to demonstrate their learning in a variety of ways. Computer-marked assignments are to be used mostly for formative needs of the learners as well as the course objectives. LMSs provide many types of questions for automated marking. The following question types can be created using an LMS automated test tool.

- Either/or
- Fill in the blank
- Fill in multiple blanks
- Jumbled sentence
- Matching
- Multiple answer
- Multiple choice
- Likert scale
- Ordering
- Short answer
- True/false

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Before students complete performance or authentic assessments, teachers may need to provide scaffolding. Multiple choice and short answer assessments are useful for this purpose. However, teachers and instructors should not use computer-marked multiple choice assessments as the only form of summative assessment within a course. Students must be able to demonstrate their learning in a variety of ways. Computer-marked assignments are to be used mostly for formative needs of the learners as well as the course objectives. LMSs provide many types of questions for automated marking. The following question types can be created using an LMS automated test tool.
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purposes. At the University of Alberta, for example, WebCT Vista was used to deliver online placement testing for students: “Students are given a test prior to coming to campus to determine which course level is most appropriate” (Volchok, Caines, & Graf, 2006, p. 2). Too often, instructors and teachers rely on multiple choice and short answer assessments for summative reporting. LMSs provide a tool kit of assessments, and

... faculty can choose to assess students through a number of methods. Quizzes and other tools can be embedded within the course content to gauge students’ knowledge of the material. Subsequent or remedial material can then be selectively released based on the outcome of the assessment. Self-tests and surveys can be used throughout the course to aid instructors in the delivery of course material (p. 2).

The following sample scenario provides an example of how an LMS assessment tool can be used to achieve differentiated instruction. According to Mahdavi & Khoobkar (2010), LMSs are effective assessment tools that make it possible to assess a large group of students on a wide range of skills independent of time and location.

Sample Scenario

- **Course:** Finance
- **Topic:** Compound interest
- **Level:** University undergraduate Year 1 (100–120 students)
- **Learning Objective:** Upon completion of the unit, students should be able to calculate the compound interest on a loan.
- **Formative Assessment:** To assess prior knowledge and experience about compound interest, the instructor uses the assessment tool to create a multiple choice quiz (50 questions). The LMS is set to auto mark the quiz and provide immediate feedback. Students are then directed to the next activity based on their score.

- **Instructions to the Students:** Our topic of study for this unit will be the calculating of compound interest. Before completing the unit readings, complete this multiple choice quiz. The quiz will be open for the duration of Week 2. You have one attempt at the quiz, and 60 minutes to complete it once you start. Based on your quiz results, you will be assigned the next appropriate activity.

- **Differentiating the Follow-Up Activity:** Students will be assigned one of the following activities:

  **Activity 1 (For learners Who Score 0–25 of the Total 50)**
  Students watch a video capture (20 minutes) that shows step-by-step examples of how to calculate compound interest. After viewing the video capture, students complete an assignment where they have to show (step-by-step) how to calculate compound interest. The work is submitted via the assignment dropbox in the LMS.

  **Activity 2 (For Learners Who Score 26–45 of the Total 50)**
  Students work through an interactive PowerPoint that goes through a few examples of how to calculate compound interest. After working through the examples, the students complete an assignment where they have to calculate compound interest but provide only the answers (not their step-by-step work). The work is submitted via the assignment dropbox in the LMS.

  **Activity 3 (For Learners Who Score 46–50 of the Total 50)**
  Students complete an assignment that requires them to (a) create three of their own scenarios, (b) make a prediction of which scenario would have the highest compound interest, and (c) calculate for compound interest to see if their prediction is correct. The work is submitted via the assignment dropbox in the LMS.
Comments: In this scenario the students receive a formative assessment (multiple choice quiz) that identifies what activity they should complete next. The follow-up activity is differentiated based on each student’s performance in the formative assessment. The learning objective in this scenario is as follows: Upon completion of the unit, students should be able to calculate the compound interest on a loan. Each activity is congruent with this objective.

3. Content Sharing

Student-to-content interaction is critical to the learning process, and LMSs provide teachers and instructors with a variety of options to present and assign content. Dawley (2007) describes “content areas” as “spaces online where instructors host materials for their courses or students. In an LMS, content areas include folders for items such as the class syllabus, lesson plans, weekly assignments, course documents and handouts, teacher contact information, and subject-area content” (p. 24). According to Dawley, the organization of class materials is critical to student success, and Shelton and Saltsman (2008) state, “The online course design should provide an intuitive navigation path for the student” (p. 47). A poorly organized course can create confusion, interfere with information processing, reduce retention, and frustrate students. When LMS tools are used effectively, course content is organized and navigation is easy.

Course materials can be differentiated in the LMS because content can be presented in varied formats (folders, Word or PDF files, wiki, blog, html, etc.). However, teachers and instructors should not use all formats simply because they are available. Instead, it is better to select a consistent, organized format that allows flexible and differentiated learning. LMSs can help teachers deliver differentiated instruction because content can be delivered in print, image/graphics, audio, video, flash object, and simulation. Content can be interactive by using wikis, blogs, and discussion forums within the LMS. Teachers and instructors can meet the needs of their students, and maximize the development of individual learning. LMSs allow teachers and instructors access to tools that provide a wide span of options for teaching strategies: visual learning, auditory learning, direct instruction, inquiry-based learning, collaborative learning, independent learning, constructivist learning, and opportunities for scaffolding. When LMS tools are used effectively, teachers and instructors can provide responsive teaching using a variety of instructional approaches. Figure 1 shows an example of how content could be organized in an LMS using a variety of formats.

Sample Scenario

- Course: Literature
- Topic: Haiku and quatrain poems
- Level: Grade 10 high school (25–30 students)
- Learning Objective: Upon completion of the unit, students should be able to (a) write haiku and quatrain poems and (b) summarize the history of haiku and quatrain poems.
- Formative Assessment: To assess prior knowledge and experience about haiku and quatrain poems, the teacher uses the assessment tool to create a true/false and short answer quiz (20 questions). Ten questions assess prior knowledge about the history of haikus and quatrain poems. The other ten questions assess prior knowledge about the correct structure of haiku and quatrain poems. The LMS is set to auto mark the quiz and provide immediate feedback. Students are then directed to the next activity based on their score.
- Instructions to the Students: Our topic of study for this unit will be haiku and quatrain poems. Before completing the unit readings, please complete the true/false and short answer quiz. The quiz will be...
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Figure 1. Example of course content in an LMS

<table>
<thead>
<tr>
<th>Unit 5 – Haiku and Quatrain Poems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Objectives</td>
</tr>
<tr>
<td>Instructions (How to Proceed)</td>
</tr>
<tr>
<td>Unit Readings – What are Haiku and Quatrain Poems? (PDF)</td>
</tr>
</tbody>
</table>

- Written Examples of Haiku poems (html)
- Audio Examples of Haiku poems (mp3 audio)
- Reciting a Haiku poem (mp4 video)
- History of Haiku Poems (Power Point)
- Complete these Haiku poems (Word Doc)

- Written Examples of Quatrain poems (html)
- Audio Examples of Quatrain poems (mp3 audio)
- Reciting a Quatrain poem (mp4 video)
- History of Quatrain poems (Power Point)
- Complete these Quatrain poems (Word Doc)

open for the duration of Week 7. You have one attempt at the quiz and 30 minutes to complete it once you start.

- **Differentiating the Follow-Up Activity:** Students are directed to the next activity based on how they have performed on the formative assessment. For example, students who score low (less than 6 out of 10) on the history portion of the assessment could be directed to read a Pdf article and view a video presentation about the history of haiku and quatrain poems. Students who score low (less than 6 out of 10) on the structure of the haikus and quatrain poems could be directed to review the written and audio samples of haiku and quatrain poems. Students whose score reflect they have mastered the topic could be directed to write their own haiku and quatrain poems.

- **Comments:** Providing a variety of formats in which content is presented means instruction can be suited to meet the needs of the learners. For example, auditory learners have the option of listening to a haiku or quatrain poem, and visual learners have the option of seeing a haiku or quatrain poem in written form. LMSs present
content in a wide variety of formats, and learners can choose which learning style appeals to them and meets their needs.

Summary

LMS tools enable teachers and instructors to differentiate instruction. Frequent formative assessments can be administered to students using the auto-marked assessment tool within the LMS. This not only reduces workload for the teacher or instructor but also provides immediate feedback to the students. Discussion forums can also be used to conduct formative assessments that provide teachers with information for grouping students according to their needs. Furthermore, content can be presented to students in a variety of ways, and this allows the teacher or instructor to differentiate. However, effective use of LMS tools to achieve differentiated instruction is only possible when teachers and instructors overcome barriers that prevent effective use.

BARRIERS THAT PREVENT SUCCESSFUL USE OF LMS TOOLS

This chapter has focused on (a) how LMSs are used to support instruction in face-to-face, blended, and online learning environments; (b) LMS tools that can help teachers and instructors achieve differentiated instruction and a reduced assessment workload; and (c) the enhancement of student learning through differentiated instruction. However, numerous barriers prevent teachers from using LMS tools effectively, and these barriers deter them from providing students with the best learning experiences—those that are tailored specifically to their needs. The critical question is, why are teachers and instructors not using LMS tools to differentiate instruction? The answer to this question lies in both external and internal barriers that affect the purpose and frequency of use of LMSs.

Some of the barriers that prevent teachers from using ICTs in general are the same as those that prevent them from using LMS tools for differentiated instruction. Drent and Meelissen (2008) and Selim (2007) identify internal and external barriers that prevent teachers from using ICTs in general: (a) lack of teacher training, (b) lack of commitment to constructivist pedagogy, (c) teachers’ lack of experience using the technology, (d) lack of technical support, and (e) tendency of long term teachers to use traditional approaches and teaching styles.

The same barriers also prevent successful use of LMS tools for the purpose of differentiating instruction. Internal barriers include attitudes, pedagogy, and teaching styles. External barriers include lack of time, lack of training, and lack of administration support. To effectively use LMS tools for differentiated instruction, teachers and instructors must acquire the expertise for using the technology, which means they need training and experience. For example, specific skills can be learned for setting up the differentiated release of content, quizzes, and tests that provide immediate feedback to students. In addition, “school vision, mission, and philosophy also impact the use of technology” (Nasser, Cherif, & Romanowski, 2011, 42). These also can prevent teachers and instructors from differentiating instruction. For example, when institutional practice prohibits the altering of pre-designed courses, a teacher or instructor will be prevented from trying to use differentiated instruction. Figure 2 shows internal and external barriers that prevent teachers and instructors from using LMS tools for the purpose of differentiated instruction.

CONCLUSION

Differentiated instruction is planned around the needs of the students, and appropriate instructional strategies are selected accordingly. Teachers and instructors who differentiate their lessons respond
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Tomlinson and Imbeau (2010) state, “It is certainly the case that teachers who lead effectively for differentiation operate from a clear sense that classrooms should model a world in which learning is rewarding and in which mutual respect, persistent effort, and shared responsibility make everyone stronger” (p. 26). On the other hand, while teachers and instructors might agree that differentiated instruction enhances the learning experience, the application of this may still be viewed as impractical. How far does the teacher or instructor go to ensure all student needs are met? Teachers may believe differentiated instruction is best for their students, but they may very well struggle with how to achieve this.

Setting up the LMS to differentiate content takes time and requires specific skills. Preparing formative assessments (albeit they are auto marked) takes time. Planning, organizing, and moderating course discussions that aid critical thinking and reflection take time. Teachers and instructors who differentiate their curriculum must allocate time for planning and management.

K–12 schools and post-secondary institutions are providing teachers and instructors with LMSs, but how these systems are used is influenced by internal and external barriers. Time management, training, institutional mission, attitudes, and pedagogy can prevent teachers and instructors from differentiating. However, teachers who persist in their effort to do the best for their students
will find ways to work through and around these barriers. LMS tools can be useful in applying a differentiated model to make teaching and learning a rewarding process. Laurillard (2012) states, while we cannot expect that a revolution in the quality and effectiveness of education will necessarily result from the wider use of technology, we should expect the education system to begin able to discover how to exploit its potential more effectively. It has to be teachers and lecturers who lead the way on this. No-one else can do it. But they need much more support than they are getting (p. 84).

Teachers and instructors need to consider the following important questions:

- Should students be responsible for bridging the gap between what they bring and what they are expected to learn?
- How can effective instruction begin without input from the learners?
- How can you guide student success if you are unaware of student failures?

The principle of differentiation denotes a crucial point for educators to consider when they reflect on their practice: the crux of effective teaching is to maximize individual potential, and to do this, instruction must respond to the needs of the learners. Therefore, a primary role of the teacher or instructor is to bridge the gap between what students bring and what they are expected to learn. According to Lambert and McCombs (1998), by building on the knowledge base from research and theory on how learning occurs and the individual differences that influence learning, we can see how best to work with each person’s strengths and provide the education that all people will need to maximize their development and learning. We can no longer assume that all learners bring similar experiences and needs to the learning context (p. 6).

Differentiated instruction is important to effective teaching because it responds to the needs of students. LMS tools can help teachers deliver a differentiated model that enhances student learning. The primary goal of teachers and instructors, K–12 school administrators, and post-secondary institutions must center on providing educational opportunities that respond to each student’s needs.

REFERENCES


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**KEY TERMS AND DEFINITIONS**

**Asynchronous Interaction:** Exchange and sharing of online resources and information at different times.

**Differentiated Instruction:** A teaching philosophy that acknowledges learners have different prior knowledge and skills, interests, and experiences and that requires learning activities be selected in response to formative assessment.

**Formative Assessment:** Evaluation of student knowledge about a particular topic, concept, or skill that is used to determine the next appropriate learning activity.

**LMS:** Educational software system that serves multiple functions, including course management, administration, tracking, and reporting; useful for delivery of content, assessment, and providing asynchronous and synchronous opportunities for interaction and collaboration.

**Student Readiness:** Prior knowledge and current understanding about a particular topic.

**Summative Assessment:** Evaluation of student knowledge about a particular topic, concept, or skill that contributes to calculation of final mark for reporting purposes.

**Synchronous Interaction:** Exchange and sharing of online resources and information in real time and at the same time.
Chapter 3
A Rich Environment for Active Learning (REAL): A Model for Online Instruction

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ABSTRACT

Online teaching is considerably different from face-to-face teaching. With the continued growth of online teaching, all teachers should be prepared to teach an online course. Since the overarching difference between face-to-face and online instruction is communication, it is imperative for online instruction to be delivered using a social constructivist model to make up for the lack of social interaction in the classroom. Delivering instruction using the Rich Environment for Active Learning (REAL) model has the potential to remove communication barriers and draw more students into the social aspect of instruction, and therefore truly engage them as lifelong learners. The REAL model is explored in this chapter.

INTRODUCTION

Higher education institutions understand the inherent importance of the development of online education and offering online courses, as well as the importance of improving their respective teaching and learning formats. While the majority of academic leaders believe online education is critical for their long-term strategy, there is continued concern about barriers which may impact the growth of online courses (Allen & Seaman, 2013). Academic leaders are aware that it requires extra time and effort for instructors to teach online courses (Allen & Seaman, 2013). Specifically, Beck and Ferdig (2008) found that moving their course to the online environment impelled interaction among instructors. The researchers found that instructors developed instructional teams in order to divide responsibilities. Instructors also expressed the need to promote “teacher training as a high priority for future directions” (Beck & Ferdig, 2008, p. 14). Training on time manage-
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ment, technology aspects, how to teach online, and audience analysis would be beneficial to instructors (Beck & Ferdig, 2008).

Online courses in U.S. higher education have been increasing steadily for more than ten years (Allen & Seaman, 2013). Almost a third of all higher education students (32% or 6.7 million) are taking at least one online course—courses that deliver at least 80% of the course content online. A large proportion (62%) of higher education institutions have shifted from offering specific online courses to offering complete online programs (Allen & Seaman, 2013). Nearly 70% of higher education institutions agree that online education is a critical component of their overall strategic plan (Allen & Seaman, 2013). Despite the general enthusiasm for online learning in higher education institutions, there are two classes of higher education institutions that may not be placing urgency or priority on online education. Picciano, Seaman, and Allen (2010) found that private four-year liberal arts colleges are reluctant and research-based universities are planning for the expansion of online education, but only in select areas of study. Likewise, their study revealed that educational leaders perceive online courses as a lower quality alternative to face-to-face courses. Nearly one third of faculty (32%) view online learning as inferior, and more than a third (38%) view it as somewhat inferior to face-to-face courses (Picciano et al., 2010). However, students taking online courses recognize the benefits: flexibility for balancing career, family, and school (Picciano et al., 2010). Faculty, like their students, appreciate the flexibility, particularly in managing the added time commitments (Parietti & Turri, 2011). The demand for online courses may continue to motivate higher education institutions to focus on the quality of each course. Strategic planning for continuously improving teaching and learning formats is a part of that focus.

According to the apprenticeship-of-observation, teachers have a tendency to teach the way they were taught (Lortie, 2002); since most have received face-to-face classroom instruction, they would be inclined to teach accordingly. “Perhaps for the first time in centuries, however, instructors now have to teach in ways vastly different from how they were taught and from how they were taught to teach” (Anderson, Standerford, & Imdieke, 2010, p. 1). For universities looking to expand their course offerings to include training related to online teaching, the path is not clear-cut. With so few universities offering such courses, lack of research and few models to guide their development, there is little on which to build (Barbour, Siko, Gross, & Waddell, 2013). Furthermore, the courses, certificates, and professional development programs that have been developed vary widely in intended audience, duration, and scope (Barbour et al., 2013), providing little in the suggestion of a best practice.

The continual emergence and development of social technologies and the supporting portable hardware (Sims & Koszalka, 2008) make it a pertinent time to use social constructivist principles within maturing learning management systems (LMS). In a paper on transforming distance education, Tam (2000) states, “constructivist principles provide a set of guiding principles to help designers and instructors create learner-centered, technology-supported collaborative environments that support reflective and experiential processes” (p. 57). Tam (2000) adds that a constructivist view “summons instructional designers to make a radical shift in their thinking and to develop rich learning environments that help to translate the philosophy of constructivism into actual practice” (p. 54).

The purpose of this chapter is to propose a specific social constructivist instructional model, Rich Environment for Active Learning (REAL), as a viable option to enhance higher order thinking and student knowledge construction in online higher education courses. The emergence of Web 2.0 technologies and trends characterized by interactivity, openness, user-centeredness, dynamicity and content mobility fosters a nurturing environ-
ment for the implementation of social constructivist principles in education (Paily, 2013). Online learners are now in a position to capitalize on these constructivist-supporting technologies such as web authoring, social networking, multimedia sharing, web conferencing, and crowdsourcing (performing jobs collectively online). Learners who published in blogs and forums improved learning outcomes, motivation (Miyazoe & Anderson, 2010), and interaction (Cuhadar & Kuzu, 2010). Likewise, learners can also co-construct knowledge and artifacts with wiki applications (Miyazoe & Anderson, 2010). The increased degree of interaction embedded in a wiki can potentially give wikis an edge over blogs. Wikis support the constructivist principles of “...multiple modes of representation, Collaboration opportunities, Experience with multiple perspectives, Learner centered, Learner relevant, and Social negotiation” (Paily, 2013, p. 45). Social networking platforms have led to enhanced relationships and interactivity and promoted informal learning opportunities (Ractham, Kaewkitipong, & Firpo, 2012; Thomas & Harrison, 2009).

Modern technological developments also help to resolve some of the main problems posed by constructivism critics. In 1992, more than two decades before Web 2.0 technologies and mobile devices emerged, Dick (1992) consolidated and reduced the primary concerns about constructivist teaching to be:

1. Cost inefficient;
2. Technology dependent; and
3. Difficult to assess.

The costs of implementing constructivist principles have dropped considerably in recent years as software and hardware have become more affordable and more powerful. This cost reduction has also made technology more accessible to students, teachers, and institutions. Developments in social media have lead to novel assessment strategies like crowdsourced grading, in which peers evaluate each other’s work (O’Shea & Kidd, 2011). These innovations may reduce the difficulty of developing, distributing, and assessing learning in constructivist classrooms.

This chapter is not an attempt to show the superiority of one social constructivist model over another. Classrooms are best served by using a variety of models representing different theories of learning: “Where the curriculum is genuinely coconstructed in action, teaching methods are selected according to the needs of the moment and no methods in the teacher’s repertoire are assumed, a priori, to be good or bad” (Wells, 2002, p. 22).

**LITERATURE REVIEW**

**Social Constructivism**

There are many differing opinions on what social constructivism is. Social constructivism may be the most disagreed upon learning theory (Harlow, Cummings, & Aberasturi, 2007; Schunk, 2012). Some say it is not a theory of learning at all (Schunk, 2012), but a pedagogical intention (Nuthall, 2002), a model of knowing (Thompson, 2003), or an epistemology (Schunk, 2012; Hyslop-Margison & Strobel, 2008; Simpson, 2002). The theory was defined using a list of principles (Duffy & Cunningham, 1996; Savery & Duffy, 1996), and yet Wilson (1997) called constructivism itself “an underlying philosophy, or way of seeing the world” (p. 65), not an instructional strategy which may be “reduced to a discrete set of rules or techniques” (p. 65). Nuthall (2002) explained that most writing on social constructivist teaching does share two viewpoints: students must construct their own knowledge and learning comes from community participation.

Vygotsky is credited with developing the ideas behind social constructivism (Brophy, 2002; Schunk, 2012). His concept of the zone of proximal development, or the range between a learner’s developmental level and the level the
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A learner could reach with the support of a more capable individual (Vygotsky, 1978), along with the later concept of scaffolding, or the support that a mentor can provide to help the learner achieve beyond their independent capacity (Wood, Bruner, & Ross, 1976), both reflect the nature of social constructivism. From a philosophical perspective, “many versions of [social constructivism] maintain that objects exist only after they enter communicative space” (Keaton & Bodie, 2011, p. 192). These “communicative acts” can take place within an individual or among people: it is the social act of defining the object that forms its perceived constructs and potential meaning (Keaton & Bodie, 2011, p. 192).

Wells (2002) suggests looking at social constructivism as a framework or a stance, rather than a method. Briefly, this framework includes dialogic inquiry within a grouping of activities and participant structures: experience, information, knowledge building, and understanding (Wells, 2002). According to the Wells framework, the teacher first manages curriculum and second, assists individual students or groups as needed in their zones of proximal development. Wells outlines the following activities for building experience: drawing on relevant prior knowledge, brainstorming possible questions, approaches and procedures, and planning the goals, procedures, and materials. He explained that the information activity consists of gathering information and collecting evidence, observing and experimenting. Wells added that knowledge building occurs when students identify patterns and make connections, evaluate evidence and formulate solutions or draw conclusions, and then present results and receive feedback. Finally, students demonstrate understanding by reflecting on current understandings and strategies and determining the next step in the learning process (Wells, 2002). This process is depicted in the “model of the relationship between learning and teaching” (see Figure 1).

At a very abstract level, the building of understanding proceeds along this spiral path through experience, information, knowledge building, and understanding.

Figure 1. A model of the relationship between learning and teaching (Wells, 2009)
Social interactions in a classroom are expected to lead to improvements in higher order thinking (Palincsar, 1998). Vygotisky (1978) believed “all the higher functions originate as actual relations between human individuals” (p. 57). Researchers in Turkey recently analyzed problem solving skills and metacognition of teacher candidates, university students who have been accepted in a teacher education program, and concluded social constructivist approaches increased both problem solving skills and metacognition awareness over students in traditional classroom instruction (Bay, Bagceci, & Bayram, 2012). Teacher candidates in Taiwan described the social constructivist classroom as a “rich, interesting, and superior” learning experience compared with the traditional classroom (Syh-Jong, 2007).

Many researchers have written about why they support social constructivist teaching; however, little research showed “systematic assessment of outcomes” (Brophy, 2002, p. xiii). Research in social constructivist teaching is usually conducted with a view towards using a particular model, such as peer-assisted learning (which includes peer tutoring, reciprocal teaching, and collaborative learning) (Schunk, 2012), problem-based learning (Savery & Duffy, 1996), discourse (Brophy, 2002), cognitive apprenticeship (Brown, Collins & Duguid, 1989), or a rich environment for active learning (REAL) (Grabinger & Dunlap, 1995).

Challenges in the shift to constructivism. Objectivism or instructivism, which is teacher-centered, is commonly considered the polar opposite of constructivism, which is learner-centered. Jonassen (1991) referred to objectivism as “externally mediated reality” and constructivism as “internally mediated reality” (p. 8). There has been a shift from objectivism to constructivism in teaching since at least the 1960s when Bruner (1966) developed a method of inquiry for fifth grade social studies students. This study and other similar federally funded programs sought to instill inquiry and methodology over memorization (Fitchet & Russell, 2012) but failed to consider the students’ needs or interests, or the society they lived in (Fenton, 1991). Controversies arose around the perspectives students were exposed to, the neglect of traditional social studies curriculum, and the ill-structured content (Cunningham & Duffy, 1996) which led to difficulties with the need for student assessment to substantiate the success of the curriculum (Wolcott, 2007). These challenges continue with constructivist methods today. Researchers from different perspectives have claimed public education is on the decline and blame teachers for using constructivist methods (Matthews, 2003; Stone, 1996), while another explained the misrepresented statistics that are used to scare the public and discredit public education and instead presented statistics substantiating education improvement (Ravitch, 2013).

Constructivism and online instruction. While the objectivist and constructivist controversy continues, technology has grown and improved. Huang (2002) explained how adults, online learning and constructivism are ideal together, stating, “through Web mechanisms, the learner can search actively and discover [a] rich resource to solve problems or construct his or her own knowledge. Thus, the Web becomes a common tool for learner-centered or constructivist learning” (p. 30).

Constructivism, because it is derived from classroom practice, has helped many more classroom teachers to discover that there is more to teaching and learning than what goes on in the classroom on campus under the eye of a teacher; on the contrary, they find that they can access richer learning environments in students’ homes and work places, providing structured learning and dialogue with their students through the media of communications technologies. (Moore & Kearsley, 2012, p. xvi).

Electronic communications last longer than lectures. The Internet was originally created to allow researchers to share computer resources; electronic messaging to allow users to com-
municate personally fueled its growth (Hafner & Lyon, 1996). The concrete nature behind electronic communication should be leveraged since students recall less than half of the lecture right after class and less than 20% a week later (Gardiner, 1994). “In contrast, interests, values, and cognitive skills are all likely to last longer, as are concepts and knowledge that students have acquired not by passively reading or listening to lectures but through their own mental efforts” (Bok, 2006, pp. 48–49).

As such, instructors should consider using constructivist principles for online learning. Researchers report differing results when using constructivist principles in online instruction, depending on the students (Chen & Bennett, 2012). For example, some students are more comfortable with traditional lecture methods (Gabriel, 2004) or are resistant to change (Kuhn, 1970). Once students experience collaborative, online learning, they can see the benefits and may change their previous negative opinions (Gabriel, 2004).

Online Instruction and the REAL Model

Online courses are usually instructor-led but can also be self-paced or self-directed. These online learning courses might also be referred to as web-based learning or e-Learning (Moore, Dickson-Deane, & Galyen, 2011). Berge (1995) divided online course facilitation into four areas: pedagogical, social, managerial and technological. Common characteristics and technological tools in online courses include asynchronous group and individual messaging in the form of discussion boards and email, course material access through an LMS or content management system (CMS), and real time interaction through chat or synchronous video conferencing (Mason, 1998; Moore et al., 2011).

In an online course, therefore, students should learn through their interaction with the material, the instructor, and other students. As learners embark “on a process of discovery with one another, rather than being told what they need to memorize or know, the outcome is a deepening of the learning experience and satisfactory achievement of learning objectives” (Palloff & Pratt, 2001, p. 3). Faculty need to relinquish their control of the class and allow this to happen (Palloff & Pratt, 2001) and Palloff and Pratt (2005) suggest ways to collaborate online such as small group assignments for research or case studies, simulations, homework forums, and mutual sharing and feedback for papers. “‘Read and discuss’ online classes are no longer seen as the best way to deliver content” (Palloff & Pratt, 2005, p. 4).

One social constructivist instructional model, REAL, should be considered for online instruction because it allows the instructor flexibility, fosters generative learning, student responsibility and initiative, and social knowledge construction through authentic learning experiences. This model is expected to empower students to actively construct knowledge through inter- and intrapersonal communicative actions. While research conducted on the use of REAL is sparse, this chapter will provide some of the merits found in the model through examples from the literature and from a university level course, which was designed to help others build skills in online course development and facilitation.

MODEL DESCRIPTION: REAL

Rich environments for active learning, also known as REALs, is an instructional model that evolved from social constructivist principles. As defined by Grabinger and Dunlap (1995), who put a name to this instructional model, the characteristics of a REAL are: active knowledge construction and
evolution, indexed knowledge acquisition, and collaboration and social negotiation of meaning (see Figure 2). Though Grabinger and Dunlap (1995) do not specifically call REAL a social constructivist model, they stress the importance of collaboration, which is a clear indicator of their intention for learning to come from community participation. From the perspective of constructivism, a REAL:

- Promotes study and investigation within authentic contexts;
- Encourages the growth of student responsibility, initiative, decision making, and intentional learning;
- Cultivates collaboration among students and teachers;
- Utilizes dynamic, interdisciplinary, generative learning activities that promote higher-order thinking processes to help students develop rich and complex knowledge structures; and
- Assesses student progress in content and learning-to-learn within authentic contexts using realistic tasks and performances (Grabinger & Dunlap, 1995, p. 5).

The REAL model also has five attributes that are necessary in meaningful face-to-face and online learning (Buckley, Garvey & McGrath, 2011; Grabinger & Dunlap, 1995; Grabinger, Dunlap & Duffield, 1997; Johnson, 2013). These include:

- Student responsibility and initiative;
- Generative learning activities;
- Authentic learning contexts;
- Authentic assessment strategies; and
- Collaborative learning.

Figure 2. REAL definition framework depicting the relationship between the learning theory and the REAL model (Grabinger & Dunlap, 1995, p. 13) used under CC by 3.0 Unported (http://creativecommons.org/licenses/by/3.0) / co-operative support changed to collaborative learning (Grabinger, Dunlap & Duffield, 1997)
Using the REAL model, learning activities within the LMS should promote student collaboration. The understanding of a topic or subject is molded through experience rather than the more traditional transfer of knowledge from teacher to student. Learning is student-initiated and generated through realistic contexts. A REAL reflects the four steps of Wells’s (2002) Spiral of Knowing: experience, information building, knowledge construction, and understanding. The REAL model is enhanced by sophisticated models of how design happens in real-world contexts and is grounded in academically recognized theories of teaching and learning.

**Student Responsibility and Initiative**

Online learners are well positioned to manage their own learning. Students show initiative as they plan their time and involve themselves in selecting, coordinating and executing their own coursework. Thus, students in the online learning environment employ responsibility and initiative, as they participate in synchronous and asynchronous discussions and then choose and complete projects or activities online (Johnson, 2013).

Student responsibility and initiative refer to the student’s right to make decisions, or accept responsibility, for their own learning (Cambourne, 1995). It is the difference between intentional learning and incidental learning. Intentional learners have purpose, put forth effort and are actively engaged (Palinscar & Klenk, 1992). Intentional learners need to know themselves well enough to make choices about their learning activities (Brown, Bransford, Ferrara, & Campione, 1983); this takes responsibility and initiative, as students are not just choosing simplistic activities in order to get by. Incidental learning can occur merely through an experience; in contrast, the intentional learner’s goal is to learn from the experience (Bereiter & Scardamalia, 1989). “It is clear that intentional learning is an achievement, not an automatic consequence of human intelligence” (Bereiter & Scardamalia, 1989, p. 366). Palinscar (1990) explained that the extent to which students become intentional learners depends on the extent to which they are involved in the choice of learning activity and therefore feel in control of learning. Responsible students want to know what it takes for them to learn and they take the initiative to find out.

However, students often sit passively in the classroom throughout most of their education. They usually are not allowed or asked to be responsible for their learning by being allowed or encouraged to choose what they learn or by being allowed to work with others (Grabinger, 1996). A study of an English as a Foreign Language (EFL) class supported the idea that using Internet communication tools such as e-mail, newsgroups, and chat appeared to encourage students to be more expressive and less passive than in a traditional environment, leading to “increased engagement, confidence, and responsibility” (Young, 2003 p. 458), even though the tools alone did not improve the level of student work. Teachers encourage responsibility and initiative by allowing students to have this larger role in their own learning. Grabinger’s (1996) intent was for teachers to involve others such as parents, administrators, and colleagues to help plan strategies to encourage students to be responsible.

**Generative Learning**

The second attribute of a REAL, generative learning, provides students the opportunity to investigate, research, and solve problems (Vonderwell & Turner, 2005). Students become the investigator while the teacher facilitates (Grabinger & Dunlap, 1995). Merlin Wittrock (1974) conceived the generative model of learning around the time of the paradigm shift from behaviorism to cognitivism. The generative learning model’s unique contribution was “its emphasis upon both concrete, prior, distinctive experience and abstract verbal abilities transferring to and being used to construct”
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(Wittrock, 2010, p. 41). The goal of this learning theory is to encourage learning with understanding, which according to Wittrock (1974), occurs through discovery as the learner takes action to make sense of the information. Wittrock clarified through the following example:

*Although a student may not understand sentences spoken to him by his teacher, it is highly likely that a student understands sentences that he generates himself. In this context, generation and understanding are closely related; possibly one causes the other, or perhaps the terms are synonymous* (Wittrock, 1974, p. 182).

The theory of generative learning is situated in cognitive principles because the theory relies on the assimilation of information within existing cognitive structures developed through past experience (Wittrock, 2010). Some researchers argued that the introduction of Wittrock’s generative theory was influential in developing and propagating the constructivism paradigm that was underway (Mayer, 2010; Tobias, 2010). Wittrock (1992) later recognized that generative theory extended cognitivism because generative activities emphasized the construction of associations rather than information storage.

In introducing his theory, Wittrock (2010) referred to studies conducted by himself and his students. The reports showed strong support for student generation of cognitive associations in recall, comprehension, and retention. One study showed that retention and comprehension of a given text passage was higher when students were given a word organizer and even higher when students were asked to generate a sentence in their own words about the passage. In another study, college students asked to recall a group of words had higher recall when directed to regroup the words in a way that seemed logical to them (Wittrock, 2010). Based on these findings, Wittrock (2010) declared, “I believe that the generation from one’s memory of abstract and concrete associations is a cognitive process involved in learning with understanding, comprehension, and long-term recall” (p. 43). Other research supported the claim that generative learning positively impacted recall, retention, and comprehension (Doctorow, Wittrock, & Marks, 1978). Peper and Mayer (1978) added that generative activities can help learners develop broader and more widely transferrable conceptions.

The act of note taking during class is a seemingly obvious generative learning activity. Shortly after the introduction of generative theory, the impact of note taking as a generative task was investigated (Peper & Mayer, 1978). Peper and Mayer (1978) studied how note taking related to information encoding. They described the two forms of encoding as either (a) assimilating information within “meaningful structures” (p. 515) or (b) arbitrarily storing new information. Whereas the arbitrary association of information requires only that the information be received, the assimilation form of encoding occurs under three conditions: (a) the information was received; (b) the learner has past experience related to the information; and (c) the learner actively processes the new information with their existing experience. The assimilation of information into the existing cognitive framework of experience and understanding, as defined by these three conditions, is, in essence, generative learning. The results of the note taking study indicated that note taking can help assimilate new knowledge within older understandings and this activity may be more beneficial to students struggling with concepts (Peper & Mayer, 1978).

In another example, Ritchie and Volkli (2000) examined generative work done by an individual in comparison with generative activity involving a group of learners using concept maps and object manipulation in a lab setting. The study also examined the impact of the order of sequential generative activities. They found that learners who worked independently performed as well as learners working in teams. However, students
performed higher on the assessment that first used the concept maps and then manipulated objects than those with the reverse treatment sequence. Researchers suggested that a general encompassing activity like concept mapping provides a strong foundation for more specific learning activities to follow (Joyes, Fisher, & Coyle, 2002; Ritchie & Volkl, 2000).

Using the generative learning attribute, teachers develop learning activities that include problem-solving tasks which allow the students to generate ideas and work on a project that is of value to them. Students create their own goals and objectives and apply them (Grabinger & Dunlap, 1995). In addition, generative learning involves students making sense of the point of view of others through discourse (Schaverien, 2003).

Generative learning activities provide students the opportunity to investigate, research, and solve problems (Vonderwell & Turner, 2005). “Generative learning…simply demands that students produce something of value. It is probably the most exciting part of a REAL because students work on projects and tasks that are relevant to them and to their peers” (Grabinger & Dunlap, 1995, p. 20).

**Authentic Learning**

The third attribute of the REAL model is the creation of authentic learning contexts. Authentic learning contexts are those with realistic situations, conditions, or tasks given to students within a learning environment to create a deeper knowledge. Creating realistic, rich, and relevant learning contexts, which are focused on the students’ needs is essential. Students benefit from realistic, authentic learning environments that have relevance to their future careers, such as the use of productivity and collaboration tools (Vonderwell & Turner, 2005). Brown et al. (1989) explained that knowledge is situated and “in part a product of the activity, context, and culture in which it is developed and used” (p. 32). Authentic learning activities should be meaningful, purposeful, and logical (Brown et al., 1989).

An authentic learning context considers the capabilities of the students and places them in the most realistic or authentic setting possible (Grabinger & Dunlap, 1995). Placing a student in an authentic setting or providing an authentic task is central; when students work in groups within this setting to solve and explain, deeper knowledge and learning may occur (Grabinger & Dunlap, 1995). There are benefits of authenticity in the learning context. If students can relate a problem or situation to something they encounter in daily life, learning is more likely to occur. As the students interact with the authentic problem or situation, they take initiative to gather information in an effort to solve the problem (Grabinger & Dunlap, 1995).

Anchored instruction is an example of a REAL strategy that can be used to support authentic instruction. Anchored instruction aims to overcome the problem of inert knowledge, or knowledge which can be recalled when requested, but is not necessarily “used spontaneously in problem solving even though it is relevant” (The Cognition and Technology Group at Vanderbilt, 1990, p. 2). Overcoming the inert knowledge problem may be accomplished by “creating environments that permit sustained exploration by students and teachers and enable them to understand the kinds of problems and opportunities that experts use as tools” (p. 3). An example provided by Grabinger and Dunlap (1995) presented students in an instructional design and development class working in teams with actual clients to develop instruction that will be delivered to another group of students. These realistic, problem-solving activities also encourage collaboration and peer review opportunities.
Authentic Assessment

The fourth attribute, authentic assessment, builds on the authentic learning contexts described above. Like authentic learning activities, authentic assessments are realistic and ill-defined; they require the student to use content knowledge in context and emphasize “depth more than breadth” (Grabinger & Dunlap, 1995, p. 23). The goals of the two, activities and assessments, however, are different. Authentic learning activities are designed to allow students to develop and practice skills with the support of others while authentic assessments are designed as a means of evaluation (Gulikers, Bastiaens, & Kirschner, 2004).

It is important to note that authentic assessments differ from traditional assessments in several important ways. Whereas a more traditional assessment might ask students to recall facts or demonstrate basic skills as a summative measure, an authentic assessment provides insight as to how the student will perform when faced with a similar problem in real-life (Grabinger & Dunlap, 1995). Furthermore, well-designed authentic assessments require the student to complete a meaningful task or solve a problem in its entirety (Cumming & Maxwell, 1999). For instance, as Cumming and Maxwell (1999) explained, “writing a report demands skills of integration which go beyond the drafting of separate paragraphs” (p. 181). In addition, an authentic assessment tends to be more formative in nature, working as part of the learning process or, in a more summative application, used to make decisions (Gulikers et al., 2004).

The differences between traditional and authentic assessments necessarily require a different approach to scoring as well. Grabinger and Dunlap (1995) suggested that authentic assessments should be designed to allow students to express their interests and work to their strengths. Moreover, scoring guides for authentic assessments should contain “complex multi-faceted criteria that can be specified and that are reliable across multiple scorers” and should be shared with students in advance of the task (Grabinger & Dunlap, 1995, p. 23).

In practice, using authentic assessments will typically require students and their teachers to employ a variety of skills. In describing one model REAL environment, Grabinger and Dunlap (1995) explained that in completing a project designing projects for their community, students were required to demonstrate all of the following skills: project management, research, organization and representation, presentation, and reflection. Similarly, in assessing their students, teachers may need to use alternative methods such as observing students, distributing questionnaires, or in-depth reviews of student documents or other work products.

Collaborative Learning

The final attribute of REAL as an instructional model is collaborative learning. Collaboration is part of Vygotsky’s explanation of the zone of proximal development (Vygotsky, 1978): learners can solve problems in “collaboration with more capable peers” (p. 86). Social negotiation is one of the specific strategies constructivists use, according to Ertmer and Newby (1993). “Meaningful social interaction is the foundation for constructing rich environments for active learning” (Vonderwell & Turner, 2005, p. 68). Through collaboration, students work together to access resources and experience and develop an appreciation for multiple perspectives (Buckley et al., 2011; Grabinger et al., 1997). Collaboration is defined by Roschelle and Teasley (1995) as “a coordinated synchronous activity that is the result of a continued attempt to construct and maintain a shared concept of a problem” (p. 70). Collaborative learning is different from cooperative learning, which includes more structure and individual accountability.
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(Arendale, 2005; Henri & Rigault, 1996; Smith, Shepard, Johnson, & Johnson, 2005) and consists of dividing the work more than working together (Roschelle & Teasley, 1995).

Vonderwell and Turner (2005) discussed the importance of collaboration structured into a course: students learn to work together rather than dividing group work and completing it alone. A problem-based learning environment is an example of a learning system where collaboration is used throughout the problem-solution process (Grabinger & Dunlap, 1995). Students are presented with a problem and then they work together using their own knowledge, learning from their peers, and developing new knowledge on the subject in attempts to develop a solution.

Interaction in the online class consists of three kinds of meaningful social interaction. Students interact and collaborate using tools such as discussion groups, electronic mail, or chat (Dunlap, 1999). According to Moore and Kearsley (2012), interactions are student-to-student, teacher-to-student, and student-to-content interactions. Student-to-student interaction often occurs during meaningful discussion with peers in discussion threads and during group work, as well as within the peer review process. Instructors may need to give students a focus or project for the discussions (Dunlap, 1999). Teacher-to-student interaction happens when the teacher provides meaningful feedback and the student reflects upon this and assesses his or her own understanding of the learning context. This type of social interaction also occurs during various dialogues with the instructor over the semester through email, discussion thread and synchronous meetings. Finally, student-to-content interaction occurs as the student investigates and researches related content as well as when interacting with the instructor developed learning materials (Johnson, 2013; Moore & Kearsley, 2012).

Collaboration online can be an advantage over a traditional classroom. While involved in collaborative learning, students may express themselves freely and spontaneously without having to find an opening to speak. Other students may focus more on the message than the messenger (Henri & Rigault, 1996). Despite the evidence supporting the REAL model, such instruction may suit some students more than others—for example, reflective learners may be more successful than active learners in online classes, in both collaborative and self-directed formats (Battalio, 2009).

LEARNING TO TEACH ONLINE USING A REAL MODEL

An undergraduate course called “Introduction to Online Teaching” was developed using the REAL instructional design model. The course was designed to be taught completely online but can be adapted for a blended course structure. The intended audience for the course is teacher candidates or university students preparing to teach in the K-12 environment in a face-to-face, blended, or a fully online classroom.

Throughout the course, the teacher candidates will learn the basic principles of online teaching through personally navigating and managing online teaching experiences. The students will be responsible for developing two units of instruction. First, small groups of students design a week of content and learning activities related to a given issue in online teaching. The online learning issues were selected after a review of research into the training needs of such students, national standards for online learning, and the concepts covered by other online teaching courses (Dawley, Rice, & Hinck, 2010; Duncan & Barnett, 2009; International Association for K-12 Online Learning, 2011). Each of the groups are responsible for facilitating the online teaching course for one week.

The second unit students develop will be related to their specific area of study. These teacher candidates build on their experiences throughout the course to develop a unit that they may someday use when they are certified teachers. For example,
a teacher candidate planning to teach seventh
grade science may develop a unit on heredity that
involves a high degree of online collaboration as
students collect information about inherited traits
from people around the world.

The development of these two units is sup-
ported through regular online synchronous class
meetings in which students can practice using
the technologies and asking questions. Students
also participate in design review meetings before
they deliver their topic in online teaching unit to
their peers. These design review meetings help
ensure that key content is addressed and also that
workload and delivery method will be adequately
managed. Students will turn in regular project sta-
tus reports indicating the progress they are making
toward their two projects, which also provides an
opportunity to ask questions and receive support.
The principles used to design the course, outlined
Grabinger and Dunlap (1995), fully demonstrate
the REAL model.

**Learning Management System Use**

Using Garrote and Pettersson’s (2011) classification
of LMS use (distribution, communication, interaction, and administration), the following
paragraphs show how social constructivist learn-
ing activities embedded in a REAL can help
students reach the higher levels of knowledge
construction: apply, analyze, evaluate, and create
(Anderson et al., 2001).

Dougiamas (2001) suggested a progression
in how teachers use an LMS as they became
more comfortable and familiar with the system.
Instructors initially used the features of the LMS
for distributing content, opening communication
channels, and for managing quizzes and assign-
ments. Others reported that in the blended learning
setting, those three features were also the most
commonly used by the sampled instructors and
students (Lonn & Teasley, 2009).

As teachers became more experienced in
their use of the LMS, they incorporated more
interactive features like collaborative content
development (wikis, glossaries, database tools)
and structured discussion forums (Dougiamas,
2011). These features can help build community
(Black, Dawson, & Priem, 2008), an important
element of online and blended learning (Black et
al., 2008; Murphy, 2012; Rovai, 2002) for learner
 persistence, information sharing, support, and
satisfaction (Rovai, 2002). Interestingly, in their
study of LMS use, Lonn and Teasley (2009) found
that for blended classrooms, teachers and students
rated LMS-based communication tools (e.g. chat
features, discussion forums, wikis) as less valuable
than the more commonly used distribution tools
(e.g. content sharing, assignment submission, an-
nouncements, schedule, and syllabus). Addition-
ally, students valued the communication tools and
the general integration of technology in teaching
less than teachers. The researchers stated, “These
ratings suggest that students, in particular, may be
responding not to whether these tools are used,
but rather how they are used” (Lonn & Teasley,
2009, p. 693).

Dougiamas (2011) continued the LMS-use
progression to show that teachers with moderately
advanced LMS skills extended student learning
by planning sequential activities that fed into one
another, utilizing external Internet resources like
games and activities, and reflecting on course
activity using surveying features. Teachers also
used more student-centered activities like al-
lowing students more control over grading and,
to some degree, over course structure. Lastly,
expert instructors utilized their peer community
to conduct active research on their teaching and
to collaborate with peers.

This progression from distribution, student collab-
oration, activity extensions, student-involved
course planning, and on to instructor reflection
and professional community building, reflects a
positive correlation between instructor’s LMS
experience and student-centered, higher-level
learning activities. Unfortunately, Severance and
Teasley (2010) and Lonn and Teasley (2009) report
that the majority (95%) of LMS activity is in lower levels of this progression: content distribution, assignments, and broadcast communication. The REAL model can support instructor progression to the higher levels of technology enhanced teaching and learning.

Content distribution in the constructivist classroom involves more than teacher generated and teacher disseminated content; it includes student content generation as well. Students can collaboratively research and construct a class glossary or even textbook. This crowdsourced content development is made possible through Wiki technology often incorporated in the LMS. Additionally, rich sources of content exist outside the LMS. Students can experience environment or object manipulation through virtual simulations outside the LMS. As discussed earlier, object manipulation was shown to be a generative activity (Ritchie & Volkl, 2000) and well inline with a REAL.

The lack of agreement between students and instructors in the blended classroom (Lonn & Teasley, 2009) and researchers (Black et al., 2008; Murphy, 2012; Rovai, 2002) on the value of communication in LMS-supported learning suggests that instructors are possibly not using communication features in ways that researchers believe will enhance community building. Social constructivist uses of LMS communication tools could include using social networking tools featured in many modern LMSs like chat, comments, as well as exchanges across student blogs.

Lastly, administration of courses reflects a constructivist REAL when students take control over some elements of grading and class structuring (Severance & Teasley, 2010). A novel and largely untested concept of crowdsourced grading may hold promise as an authentic, generative classroom activity. Using this strategy, authority in the classroom is dispersed and students have power to evaluate each other’s work and class contributions (Davidson, 2009).

DISCUSSION AND RECOMMENDATIONS

Constructivist learning can be harder for the student and take more time for the instructor. The task of creating a complete, all-encompassing learning system may seem overwhelming, even impossible, given the pressures faced by instructors in the present higher education climate (Kitts & Hancock, 1999). The extensive time and resources necessary to implement this model is a recognizable weakness of REAL. Assessments in a REAL model go beyond simple tests to artifact analysis and observation, which can be complex and time consuming.

Allowing students to take the initiative and make decisions about their own learning is challenging. Students might be accustomed to being told what to learn and need the instructor’s help to take on a different role. The instructor will need to take time to assist students in the form of scaffolding until they become comfortable with their new responsibilities (Grabinger & Dunlap, 1995). This in itself is a challenge; as mentioned, instructors are used to teaching the way they were taught (Lortie, 2002).

Kirschner, Sweller and Clark (2006) are opponents of minimally guided instruction. “Minimally guided instruction appears to proceed without reference to the characteristics of working memory, long-term memory, or the intricate relations between them” (Kirschner et al., 2006, p. 76). Kirschner et al. (2006) believe that unguided instruction is less effective, and stated that there is “evidence that it may have negative results when students acquire misconceptions or incomplete or disorganized knowledge” (p. 84).

Empirical research on this point provided evidence that minimal guidance during instruction is less effective than guided learning designed to support the cognitive processing necessary for learning (Mayer, 2004). Kirschner et al. (2006) stated that one of the main assumptions made in
minimal guidance instruction is that learning is most effective when students can “solve authentic problems” and gain “complex knowledge in information-rich settings” and “construct their own solutions” (p. 76).

Wilson (1997) stated that some view constructivism as being permissive with little structure, cautioning that students actually do need some structure in order to become creative. Content in the constructivist environment, such as the REAL model, will not necessarily be predetermined; students should be allowed to set their own learning objectives and select their own research topics based on their own needs (Grabinger & Dunlap, 2002). The instructional designer should not adopt performance objectives but instead select authentic tasks (Karagiorgi & Symeou, 2005). Some may be concerned with having less structure, but research suggests that “creativity arises out of the tension between spontaneity and limitations” (May, 1975, p. 115). “Surely a middle ground was needed, one where students could actively solve problems at the same time as they mastered basic skills and gained knowledge under the guidance of capable teachers” (Ravitch, 2001, p. 442).

Online courses can offer the flexibility for students to select the content they feel will benefit their learning and achievement most (Murray, Pérez, Geist, & Hedrick, 2012). However, collaborating can be challenging in this environment. When a student does not have the instructor in class to answer questions and must wait for a response to the communication and feedback, this can be a barrier to learning (Vonderwell & Turner, 2005). Additionally, interacting with team members who are not actively involved and collaborating, waiting for group member responses, and attempting to develop interpersonal relationships with the instructor and team members may also be barriers to learning (Vonderwell & Turner, 2005).

Online instruction may draw self-directed learners or online instruction may help create self-directed learners. Studies show mixed results; self-directed learners are not always the most successful online students (Chou, 2012; Chou & Chen, 2008; Corbeil, 2003). Sherry (1996) recommends students in online courses use tools to help track progress and stresses the importance of prompt feedback. The LMS can help with tracking progress and delivering feedback. The REAL model can help self-directed learners grow by allowing them to be involved in selecting their own realistic learning activities.

Instruction under the REAL model calls for realistic activities, demands collaboration, needs self-reflection, requires research, and is designed for and develops self-directed learners (Dunlap, 1999). The Internet makes process modeling by an expert accessible to students, reflecting real-world applications using multimedia elements such as video and audio (Collins & Brown, 1988; Dunlap, 1999). Students also have access to tools online to create meaningful, realistic artifacts for class presentations (Dunlap, 1999).

Students collaborate using tools such as discussion groups, electronic mail, or chat; instructors may need to give students a focus or project for the discussions (Dunlap, 1999). “Self-reflection implies observing and putting an interpretation on one’s own actions” (Von Wright, 1992, p. 61). As Wade, Fauske and Thompson (2008) explained in a literature review, written instead of oral reflection is more effective because it takes more thought to produce and the audience can take more time to receive the reflection; writing for oneself (as in a private journal) can produce a more shallow reflection than writing publicly, as in a blog or discussion group—possibly more so with a discussion group because the writer expects a reply.

Research can be seamlessly integrated into the online classroom; this can be a strength of online learning, with access to people and information not found in a campus classroom (Dunlap, 1999). Active learning implies the students are doing the research, not the instructor. Unless all students are equipped in the traditional classroom with Internet capable devices, they may not be as active as the online students who require the Internet.

CONCLUSION

The REAL model, with its foundations in social constructivism, may prove a viable model for online teaching and learning as it emphasizes the need for collaborative, generative, authentic, and problem-based teaching methods. Online students are in a position to demonstrate responsibility and initiative in their learning, which is another key REAL attribute, as well as be more creative.

Individuals learn to apply tools and knowledge in new domains and different situations within a REAL. Students are given the skills to become successful citizens, they are engaged in knowledge-construction and problem-solving activities, as well as thinking and learning processes they will be expected to engage in once they are on the job (Grabinger et al., 1997). Students become lifetime learners (Grabinger et al., 1997). Grabinger and Dunlap (1995) stated that, “in today’s complex world, simply knowing how to use tools and knowledge in a single domain is not sufficient to remain competitive as either individuals or companies” (p. 5).

Using the REAL instructional model to design online courses that utilize the social constructivist compatible elements of an LMS can provide instructors and instructional designers with a framework for enhancing student-centered environments in which students actively construct, evolve, and assimilate knowledge and socially negotiate meaning. The REAL model brings student responsibility and initiative, generative learning activities, authentic learning contexts, authentic assessment strategies, and collaboration together within an LMS to provide an enriching, social constructivist learning environment.

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**ADDITIONAL READING**


**KEY TERMS AND DEFINITIONS**

**Authentic Assessment:** Authentic assessments are realistic and ill-defined learning activities used to connect the authentic learning contexts and should be implemented to evaluate skills developed in the activities.

**Authentic Learning:** Authentic learning contexts can be defined as the construction of realistic situations, conditions, or tasks given to students within a learning environment to create a deeper knowledge.

**Blended Instruction:** An educational program in which instruction takes place both online and face-to-face.

**Collaborative Learning:** Collaborative learning is a meaningful interaction of two or more individuals working together synchronously in an attempt to solve a problem.

**Constructivism:** A theory in which learning and knowledge are generated when a student experiences learning first-hand and from previous experience.

**Generative Learning:** An educational method in which learners use their past experience and understanding along with their present understanding of a concept to create meaningful products.

**Instructional Design Model:** A framework or guide for the structure of delivering an educational course.

**Online Instruction:** An educational program in which the instructor delivers content, instruction, and materials over the Internet and the student attends class within this online classroom.

**REAL:** Rich Environment for Active Learning (REAL) is a comprehensive and advanced instructional design model that evolved from constructivist theories. Students are engaged in their learning through collaboration, responsibility, higher-order thinking processes, and realistic tasks.

**Social Constructivism:** A theory in which learning and knowledge are generated when a group of students experience learning.

**Student Responsibility:** This refers to the student’s right to make decisions and be responsible for their own learning; it is not referring to an act as simple as a student turning in an assignment; it is bigger than that.
Chapter 4
Active Learning Strategies for Online and Blended Learning Environments

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ABSTRACT
Students must be engaged in active learning opportunities that allow them to feel connected to the class and not just a passive spectator. However, that may require the instructor to learn and try different methods of teaching and learning that are more student-centered and less faculty-centered. The purpose of this chapter is to assist faculty in developing active learning strategies that will advance their personal skill sets to better embrace learner-centered instruction with the use of technology tools for online and blended environments.

INTRODUCTION
In recent years, models of active learning strategies have expanded (Gibson & Shaw, 2011). In the past, lecture was the choice for teaching and written exams were used for assessments. Early on, Bloom, Englehart, Furst, Hill, and Krathwohl (1956) noted that the delivery and assessment of knowledge in this manner did not require students to use any type of critical thinking or analysis of content. However, recent studies have proven that active teaching strategies support critical thinking more readily than monotonous lectures (Neuman et al., 2009; Penningroth, Despain, & Gray, 2007; Ridley, 2007; Whitmire, 1998). Furthermore, fostering student engagement through active learning activities and assessments can impact comprehension, retention, and problem-solving skills (Bluestone 2000; Bransford, Franks, Vye, & Sherwood, 1989; Krain & Shadle, 2006; Michel, Cater, & Varela, 2009; Switky, 2004). Students must be engaged in active learning opportunities that allow them to feel connected to the class and not just a passive spectator.

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Much has been written about passive and active learning since Piaget’s (1972) theory of Cognitive Constructivism and Vygotsky’s (1978) Social Constructivist Theory provided the foundation of a broad constructivist learning theory, also called constructivism. Constructivism emphasizes that the student creates their knowledge and learning based upon previous experiences. Smith and Ragan (1999) identified the foundational assumptions of constructivism:

- Knowledge is constructed from experience.
- Learning results from a personal interpretation of knowledge.
- Learning is an active process in which meaning is developed on the basis of experience.
- Learning is collaborative with meaning negotiated from multiple perspectives. (p. 15)

More than ever, in both K-12 and higher education, constructivist teaching methods and active learning strategies are utilized to better prepare digital age students. In addition, constructivism has maintained its relevancy in the literature. At the same time, the literature acknowledges that constructivism increases online student engagement while supporting student success (Shelton, Cummings, & Mason, 2014).

**BACKGROUND**

Constructivism teaching and learning methods such as active learning are being implemented more frequently now that students are needing a more student-centered approach. Active learning strategies are rooted in constructivist learning theory because of its emphasis on the student being actively engaged in knowledge construction (Cakir, 2008; Jones & Brade-Araje, 2002). Many researchers have prescribed the implementation of active and collaborative learning processes to guide the development of course content and conceptional meaning, to improve higher order thinking skills, and to encourage shared exploration (Brindley, Walti, & Blaschke, 2009; Jonassen, Davidson, Collins, Campbell, & Haag, 1995; Simiens, 2002). Because a growing body of evidence indicates that inductive teaching and learning methods such as simulations, role playing, problem or project-based, and case-based learning produce more positive learning gains than traditional lecture methods (Hovancsek, 2007; Prince, 2004), each method is explored in this chapter. In addition, in order to support active learning, the following tools and approaches are also discussed: Web 2.0 tools, collaboration, building community, and flipped classrooms.

**Simulations**

Interactive simulations are defined as programs that attempt to replicate an authentic system, event, or process and where learners interact with the simulation (Alessi & Trollip, 2001; Blake & Scanlon, 2007; de Jong & van Joolingen, 1998; Lean, Moizer, Towler, & Abbey, 2009; Mislevy, 2011). As an active learning strategy, simulation encourages students to practice critical thinking skills and reflection on their actions (Morse, 2012). As faculty move to utilize experiential learning in classrooms, interactive online simulations have become a popular trend (Hanlon, 2008; Lean, Moizer, Towler, & Abbey, 2009).

According to Blake and Scanlon (2007), numerous benefits of using simulation in the science classroom have been identified. Simulations can replace laboratory activities that are considered dangerous, reduce the costs of lab equipment and supplies, lessen time spent on experiments, allow teachers to interact with students in lieu of management and supervision of the experiment, and promote inquiry-based learning through the development of hypothesizing and exploration. By allowing the learner to control the pace and content, learning can be individualized to match each learner’s needs (National Research Council,
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Prensky (2007) suggested that simulations created a risk-free environment where learners can experiment, make mistakes, and start over if necessary. He also suggested that simulation is a real-world experience that helps the learner with understanding complex issues.

With the rapid technological advancements, educational leadership preparatory programs have also begun to use simulations to provide authentic learning and assessment opportunities. Most students enrolled in educational leadership programs are full-time educational professionals and this can impact the types of field experiences they conduct in their internship. According to Edmonson (2002), many of these students have limited opportunities for administrative practice during the internship and yet when they complete the program they are expected to have the skills and expertise of a knowledgeable administrator. This unfortunate reality has created a necessity for the classroom to be the ideal environment for students to participate in authentic learning opportunities. In a study conducted by Whitaker, King, and Vogel (2004), educational leadership students identified simulations that were directly connected to their field as one of the most effective strategies in their program of study. These simulations were designed to closely emulate the experiences of a school or district-level administrator. In addition to the students’ positive remarks, course instructors agreed that the simulation project provided an authentic assessment of the students’ knowledge and skills that were comparable real world experiences of a school administrator.

Several research studies recognized the value and effectiveness of using simulations in teaching and learning (Feinstein, 2001; Keys & Briggs, 1990; Ruben, 1999; Wolfe & Crookall, 1998). Ruben (1999) contended that effective simulations addressed cognitive and affective learning difficulties and enhanced collaboration through student-to-student interaction and active learning. Other research studies suggested with the use of simulations, students acquired a conceptual understanding of scientific investigations through support and scaffolding (Colella, 2000; Klopfer, Yoon, & Um, 2005; Sandoval, 2003; Sandoval & Reiser, 2004). Later, Mislevy (2011) described an effective simulation design as one that focused on the learner’s knowledge and skill level(s), allowed multiple, risk-free attempts, and ensured feedback to the learner was timely and informative. Simulation design should also include opportunities for the learner to practice, to identify outcomes, and to improve their skills and help them understand what works and what does not work. Hanlon (2008) agreed that well planned simulations can provide incredible learning experiences that lead to understandings beyond what most textbooks produce. Kopriva, Gabel, and Bauman (2009) reported that English language learners, students with learning disabilities, and at-risk students may be more proficient at demonstrating mastery of knowledge and skills through simulations than paper and pencil assessment.

Jeffries and Rogers (2007) contended that formative or summative assessments can be used when assessing students interacting in a simulation project or a course. Michelson and Manning (2008) noted that defining the measurable outcomes and then assessing the learner’s performance remained a critical element in effective use of simulations. According to Brown, Hinze, and Pellegrino (2008), simulations were found to be conducive for collecting and analyzing data to develop the feedback needed for formative assessment. Evidence can be collected and analyzed related to the students’ inquiry methods, the order and number of attempts when problem solving, the amount of time spent on different activities, and how they manipulate the features of the simulation which can result in immediate feedback and individual mentoring (National Research Council, 2011). Using simulations as a formative assessment tool can provide opportunities for an instructor to understand students’ thinking and help find gaps in that thinking (Rudolph, Simon, Raemer, & Eppich, 2008). This can lead to the student’s deeper un-
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understanding of concepts and process skills that are aligned with summative assessments (Quellmalz & Pellegrino, 2009). However, it is important to note that Lunce (2004) suggested that although research provided evidence that simulation can develop the understanding of specific concepts, further data collection and assessment are still necessary to determine the best use in distance education. More attention should be placed on developing assessment instruments to measure the effectiveness of simulations.

In preparing to design and integrate a simulation into a classroom, barriers, such as a lack of time for faculty preparation, faculty with little or no familiarity regarding simulations, lack of funding, and technology issues, proved to be challenging factors (Chang, 1997; Faria & Wellington, 2004; Hanlon, 2008; Moss, 2000; O’Neal, 2007; Prensky, 2007). Additionally, Prensky (2007) contended that as long as teachers feel like stand and deliver teaching is best, time would be an issue. He argued that because there is not enough time in the school year to present everything, new learning tools such as simulations are not considered. Moreover, the large majority of faculty had limited exposure to integrating simulations into teaching and learning. Teachers who were convinced that traditional hands on lab experiences should not be replaced by simulations needed reminding that many professionals actually learn their jobs through simulations. In spite of this thinking, students indicated utilizing simulations is a preferred tool when learning mathematics and science concepts (Partnership for Reform in Science and Mathematics, 2005; Project Tomorrow and PASCO Scientific, 2008). Prensky (2007) cautioned that citing a lack of money for using simulations can no longer be an excuse as more and more simulations are becoming free tools.

Simulation Examples

- **Budget Hero:** (http://www.marketplace.org/topics/economy/budget-hero) Developed by the American Public Media’s Newsroom, this simulation allows the learner to implement public policy to see the affect on the National budget (Aldrich, 2009).
- **ChemCollective:** (http://collective.chem.cmu.edu/) Virtual lab activities designed to provide interactive, engaging materials that link chemistry concepts to the real world.
- **Educational Leadership Simulations:** (http://coe.fgcu.edu/faculty/valesky/edleadsims/simulations.html) Thomas Valesky’s simulations have been viewed and used by professors and students across the world (Valesky, 2012).
- **Learning Edge:** (https://mitsloan.mit.edu/LearningEdge/simulations/platform-wars/Pages/default.aspx) These innovative and interactive tools create a virtual world in which students explore and participate in the critical management issues facing a range of industries and organizations.
- **PhET:** (http://phet.colorado.edu/) Provides fun, interactive, research-based simulations of physical phenomena from the PhET™ project at the University of Colorado.
- **Prehistoric Climate Change:** (http://www.smithsonianeducation.org/students/idealabs/prehistoric_climate_change.html) A period of sudden global warming 55 million years ago radically changed the earth. This allows students to determine temperatures through examining tree leaves and using mathematical equations.
• **SimCity**: The player is given the task of founding and developing a city, while maintaining the happiness of the citizens and keeping a stable budget.

• **The Stock Market Game**: (http://www.smg2000.org) A tool for students to build a fundamental understanding of investing while providing them with real world skills practice in math, English Language Arts, economics, social studies, and other subjects.

**Role Playing**

Van Ments (1983) defined role playing as a type of communication which involves a person imagining to be a character in a defined situation. In a similar definition, McKeachie (1986) described role playing as establishing unstructured situations where students’ behaviors are managed to align with a role in which they have been assigned. Clearly both Van Ments (1983) and McKeachie (1986) agreed that role playing required an individual to act out with words, feelings, or actions as related to a character or specified role. Equally important, Van Ments (1983) clarified and expanded the original definition proposing that two different role playing types exist in educational settings. He identified the first type as relating to practicing techniques or skills and the other pertaining to changes in attitudes, emotions, or cognition. Online learning instructors should consider both types when designing effective active learning activities (Hou, 2012).

Recent online learning research related to active learning has focused upon the effectiveness of online discussion activities incorporating activities role playing (Gilbert & Dabbagh, 2005; Hou, 2012; Hou, Chang, & Sung, 2007; Yeh, 2010). In fact, studies suggested role playing increased motivation (Wishart, Oades, & Morris, 2007), improved negotiation and decision-making (Beach, Anson, Breuch, & Swiss, 2008; Bos & Shami, 2006), enhanced collaborative learning (De Wever, Shellens, Van Keer, & Valcke, 2008; Hara, Bonk, & Angeli, 2000; Strijbos, Martens, Jochems, & Broers, 2004) and stimulated greater problem-solving (Andriessen, Baker, & Suthers, 2003; Clark & Sampson, 2008) when implemented in a variety of educational settings, including online learning. Much of the research about online discussion activities has focused upon the effectiveness of online discussion activities incorporating role playing techniques to promote active, constructive engagement in learning (Hanover Research Council, 2009). According to Russell and Shepherd (2010), when a person is role playing, the individual reacts to circumstances or situations as if he or she were actually in the character’s shoes. This type of student involvement requires the individual to engage in interactions and debate which results in the person acquiring new skills, techniques, awareness, or attitudes related to the role played activity. Additionally, in a study by Hou (2012), it was recommended that instructors force cognitive engagement by offering opportunities for students to change roles in many different tasks. Hou (2012) pointed out that this design approach may assist students in the development of enhanced knowledge construction and diversity of thinking.

Role playing typically includes a realistic or hypothetical situation and a cast of characters (Davis, 1993). Russell and Shepherd (2010) identified fundamental aspects for designing online role play activities in higher education settings. First, the instructor should “create a space for complex social learning” and second, “support explicit reflection and theorizing as a part of the role-play activity” (p. 993). Furthermore, the authors noted three additional design parameters worthy of discussion, “how a teacher or facilitator guides the process” matters; “how the technological environment pre-structures the learning experience” affects the outcomes; and “the degree of independent learning expected” should be considered (pp. 993-994). To achieve effective implementation of role playing activities as a form of alternative
assessment, Russell and Shepherd (2010), Wills (2010), and Wills et al. (2009) agreed the learning environment should be conducive for students to occupy roles and clarity of expectations and directions are crucial. Furthermore, the students must be exposed to ample opportunities for role interactions that emphasize negotiation, collaboration, and debate to increase the real life dynamics and understanding of human interaction. Also, there must be time provided to reflect upon the authentic tasks and outcomes directly related to the overall learning experience generated through role playing.

Similar to role playing, scenario-based learning is an approach that stimulates deep learning and engagement through participation and involvement in realistic situations with reflection upon the outcomes and learning (Errington, 2005). The learning experiences typically integrate subject content with practice in motivating ways often using a team approach. The activities, designed for deeper learning, regularly facilitate reflection and may include an aspect that engages the emotional aspect of learning. Furthermore, the scenarios frequently replicate situations found in the workplace and address multifaceted relationships.

Role Playing Examples

- **Higher Order Thinking Questions**: Pose thought provoking questions in discussion boards or chat areas which permit students to role play stepping into the shoes of another individual or point in time (Hanover Research Council, 2009).
- **Stories, Situations, or Case Studies**: Share stories, brief situational circumstances, or case studies to guide interaction and discussion of concepts from varied viewpoints (Jonassen, 2011).
- **Hypothetical Characters**: Establish a hypothetical character, such as a baby, develop a fictional setting and set of parameters for students to share co-parenting roles (Poling & Hupp, 2009).
- **Avatars**: Develop historical, fictional, or realistic situations and use Avatars to role play concepts associated with an event such as the Russian missile crisis (Wakefield, Warren, Rankin, Mills, & Gratch, 2012).
- **Scenarios**: Use instructor or student created scenarios composed of complex issues needing resolution that require engagement of roles and research to solve a problem (Sinclair, 2009).
- **Cooperative Learning Strategies**: Use small groups for interaction and role playing about a strategy or concept related to the course content (Johnson, Johnson, & Smith, 1998).

Problem-Based and Project-Based Learning

Formally defined, “problem-based learning is an instructional (and curricular) learner-centered approach that empowers learners to conduct research, integrate theory and practice, and apply knowledge and skills to develop a viable solution to a defined problem” (Savery, 2006, p. 12). It is an active learning activity where students are faced with a problem of which they have little or no knowledge (Wirkala & Kuhn, 2011). The problem must be ill-structured such that a quick solution may not be found. The problem should also be authentic and relevant.

Similar to problem-based learning, project-based learning is another active learning strategy; however, the final outcome for project-based learning is usually a required product such as a
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presentation or paper (Savery, 2006). Barron and Darling-Hammond (2008) identified key elements of project-based learning: the problem to be solved is a real world problem; the student will have increased control over the learning; instead of the knowledge expert, the teacher becomes the facilitator and encourages questions and reflection; and, often, students will work in teams. In addition, Larmer and Mergendoller (2010) found essential elements for successful project-based learning:

- A problem meaningful to a student that can be supported by student driven questions and allow both student voice and selection.
- Student inquiry and innovation should be encouraged throughout the process.
- Problem solving should incorporate collaboration, communication, critical thinking, technology use, and opportunities for feedback and revision.
- The project solution should be publicly presented.

For both project and problem-based learning, the instructor defines the setting, characters, roles, resources, the storyline, and problem; students must then plan, organize, research, analyze, and solve the learning activity (Stavredes, 2011). Because a clear solution is not provided, students must ask questions, collaborate, and seek additional information. Moreover, students must go beyond their current knowledge and understanding of the problem and find a solution. For additional evidence of learning gained, Savery (2006) recommended that students should also analyze what was learned and self-assessment and peer assessment should also be included.

The literature revealed many research studies regarding both problem-based and project-based learning. Overall, positive outcomes for academic achievement have been reported including better performance on high stakes testing (Penuel & Means, 2000) and demonstrating better problem solving skills (Mergendoller, Maxwell, & Bellisimo, 2006). Studies also showed that project-based learning may be more effective in certain disciplines such as math, language, science, and economics (Boaler, 1997; Mergendoller, Maxwell, & Bellisimo, 2006).

It is important to note that challenge-based learning is also similar to project-based learning. However, challenge-based learning tends to be even more of a collaborative experience in which teachers and students work together to define the project, rather than having the project assigned by the teacher exclusively. The New Media Consortium (2009) conducted an in-depth study on challenge-based learning which demonstrated dramatic gains in student performance in US 9th graders, with the highest gains among at-risk students. More research can be found at Challenge-Based Learning (http://www.challengebasedlearning.org).

Examples and Resources

- **Problem-Based Learning Clearinghouse:** By University of Denver (http://www.udel.edu/pblc/clearinghouse) - this site provides problems and articles to assist educators in using problem-based learning. The problems and articles are peer reviewed by PBL experts in the disciplinary content areas.
- **Buck Institute for Education (BIE):** (http://bie.org/) A nonprofit organization that is dedicated to providing Project-Based Learning instructional practices and products. They maintain current research, best practices, and toolkit for instructors who are just starting out with PBL.
- **Edutopia’s Project-Based Learning from Start to Finish Video:** (http://www.edutopia.org/stw-project-based-learning-
best practices new tech video) This video details a school wide PBL model at Manor New Technology High School.

- **21st Century Educational Technology and Learning:** (http://21centuryedtech.wordpress.com/2010/01/16/free-project-based-learning-resources-that-will-place-students-at-the-center-of-learning) A website that offers multiple resources.

### Case-Based Learning

Case-based learning is described as self-narrated stories (case study) that were written for classroom analysis and discussion. Case studies can come in the form of role playing, debates, trials, or even public hearings. Moreover, Herreid (2005) suggested that case studies can be interactive stories with an educational message that are easily remembered. Merseth (1996) indicated case-based learning activities typically include three components: a reality-based situation; research embedded throughout the activity; and learner exposure to various perspectives.

Case studies are an avenue of applying classroom learning objectives to “real-life” events (Eison, 2010). In fact, case-based learning has been praised for its ability to use real life narratives to engage students to explore a particular topic while developing critical-thinking skills (Herreid & Schiller, 2013). For example, because of the explorative nature of science education, case student teaching can benefit the students (Herreid, 2005). In addition, Ulanoff, Fingon, and Beltran (2009) determined that case student teaching could be used to assess students’ knowledge while connecting program content to classroom practice.

According to Herreid and Schiller (2013), the use of videos in the flipped classroom model “offers us a new model for case study teaching, combining active, student-centered learning with content mastery that can be applied to solving real-world problems” (p. 65). They illustrated an example of case-based learning being implemented in the flipped classroom with students watching a podcast or video lecture before the class actually meets. Typically, guided questions or an outline of the case study is provided for structure. Then, in class, students will continue work on the first part of the case study. Once the instruction is completed, students can continue with the second part of the case study by participating in class discussion. The authors pointed out that if students reviewed case study videos at home, more instructional time in the classroom would be available for teachers to cover more real-world problems.

Student exploration and discussion of real life situations is a key component of case-based learning (Golich, Boyer, Franko, & Lamy, 2000). In fact, Golich et al. claimed the goal of using case studies is to be learner-centered intertwined with interaction between the teacher and all students involved. “Case learning sharpens communication and critical thinking skills as students apply knowledge and evaluate options to solve the problem at hand” (Golich et al., 2000, p. 3). The authors suggested that case-based learning connects the student by active learning and shifts the responsibility of learning to the students. However, when the case study being used as an instructional tool concludes, the instructor should facilitate a de-briefing of the case. The authors pointed out important topics that were mentioned or highlighted by the students should be reviewed. It’s important to be able to connect the specifics of the conversations to the learning objective. As part of the case summary, students should be allowed to report their conclusions to end the process (Golich et al., 2000).

A purpose of implementing case studies is being able to explore complicated situations when a theoretical solution does not exist (Merseth, 1996). Many times, teacher educators utilize case-based learning to provide real life situations as part of the process; then participatory discussion is encouraged to share the learning outcomes. These learning experiences are internalized through personal reflection opportunities. Merseth (1996) suggested
that case–based learning encouraged educators to explore new methods, pedagogies, and content. The effective use of case studies should result from several guidelines (Carnegie Mellon Eberly Center, n.d.). It is important to ensure that the size of the group is appropriate for discussion. Also, the instructor should be familiar with the specific topic and issues of the case study and have prepared prompts and questions that pertain to the topic or issue. It is imperative to use the relational aspect to encourage discussion of the case study. Drawing from the students’ background, experiences, and ideologies can further enhance discussion of the case study. Case studies that covered cultural issues and promoted cultural awareness, resulted in a greater sensitivity toward diversity (Butler, Lee, & Tippins, 2006).

**Resources for Case-Based Learning**

- **National Center for Case Study Teaching in Science**: (http://sciencecases.lib.buffalo.edu/cs/collection/) A searchable repository of cases that can be searched by discipline, type of case, subject, or educational level.

**Web 2.0 Tools (Wikis, Blogs)**

According to Bhattacharya and Dron (2009), Web 2.0 tools such as social networking sites, blogs, wikis, and multimedia applications are considered to be essential for sharing and collaboration between users. These tools provide the student ways to gather information and share that information with peers. Students can begin to build their own personal learning network (PLN) in order to improve their own learning. Ajjan and Hartshorne (2008) reported that despite the fact that faculty found teaching and learning using Web 2.0 tools to be beneficial, there was little evidence of actual use in classrooms.

Web 2.0 is defined as various web-based technologies that provide opportunities for users to be consumers and producers of content through collaboration, editing, and publishing (Park, 2013; Parker & Chao, 2007; Solomon & Schrum, 2010; Tapscott & Williams, 2008). Lee (2011) surmised that with the ability to create content for an authentic audience, learners begin to take ownership for publishing quality work. In addition, when integrating Web 2.0 into teaching and learning, student engagement and learning are improved. (Abernathy et al., 2011; Baker, Rozendal, & Whitemack, 2000; Collis & Moonen, 2008; Cormode & Krishnamuthy, 2008; Park, 2013).

In order to understand Web 2.0 tools and how they transformed the learning environment, it was important to understand the revolution from Web 1.0. Flew (2008) identified the differences in Web 1.0 versus Web 2.0. Web 1.0 was about connecting computers and Web 2.0 has been about connecting people. Because of this paradigm shift, the web moved from a read-only, stagnant environment to a collaborative, interactive environment. According to Mills (2007), this shift to Web 2.0 facilitated web-based applications that allowed for a new type of communication. Social networking sites, blogs, wikis, and other media and interactive web conferencing sites provided a personal learning space where students created, shared, and received immediate feedback from peers and faculty. Park (2013) affirmed that today’s college students are Web 2.0 savvy. In a survey of 30,000 college students, Smith, Salaway, and Caruso (2009) found that 90% of the students engaged with social networking sites and 63% did so on a daily basis. Additionally, 40% utilized Web 2.0 tools such as video sharing, wikis, and podcasts for content creation. These data are evidence of how important Web 2.0 tools are in the lives of students and it is imperative that these technologies be integrated into classrooms.

Several researchers have reported on the pedagogical value of integrating Web 2.0 into teaching and learning to impact student achievement (Cobanoglu & Berezina, 2011; Junco, Heibeinger, & Loken, 2011; Mason, Abernathy, Abshire, Cummings, & Liu, 2012; McLoughlin & Lee, 2008;
New Media Consortium & EDUCAUSE, 2007; Rinaldo, Tapp, & Laerie, 2011). Lamar University Department of Educational Leadership noted the following examples used in an online master’s and doctoral program.

1. Students placed in PLCs where they upload scholarly writing samples for peer review.
2. Students are placed in groups to develop a solution based on a scenario. The students utilize Google docs, synchronous and asynchronous communication tools, social media, and Google sites for publishing content.
3. Students work collaboratively to create a website for PK-12 schools. The students use tools such as Scratch, developed by MIT Media Lab, to create animations for the website. In addition, students use Web 2.0 tools such as Glogster, Animoto, and Tagxedo to design content for the website.

Prensky (2001) pointed out urgency for developing courses around the use of Web 2.0 tools for all subjects, at all levels. There was no doubt that with the amazing advances in technology and design schemes for creating social and participatory networks, educators should acknowledge the needs of digital natives population.

**Collaboration Methods**

According to the literature, peer collaboration offers students opportunities to examine classmates’ work, question, and have knowledgeable discussions, which can lead to increased critical thinking and meta-cognitive skills (Chen, Liu, Shih, Wu, & Yuan, 2011; Topping, 1998). Davis (1993) asserted that students who are involved in collaborative work are more satisfied with their classes. According to Brindley, Walti, and Blaschke (2009), online courses allowed opportunities for peer collaboration and rich learning activities between students and instructors. Collaboration among peers is considered social learning that helps develop critical thinking skills, self-reflection, and meta-cognition skills. The authors suggested that learning results from gathering information, collaborating to make knowledge, and making it applicable. This knowledge is shared between the learners as they seek the common goal. The study found that the instructor should carefully monitor collaboration of learners. Also, collaboration in small groups created a sense of community resulting in learner satisfaction. Thus, collaboration that is joined with planned instructional strategies were shown to have group benefits such as learning at a deeper level while building confidence and skills (Brindley, Walti, & Blaschke, 2009).

**Peer Editing**

Peer editing and assessment permits students to pinpoint areas of strength and weakness, encourage learner self-management of learning, and enhance individual achievement of learning outcomes (Gueldenzoph & May, 2002). In addition, Hill (2010) considered peer editing as opportunities for assessment options and for student feedback. The peer assessment process encouraged collaboration while students are expected to think critically of what they are learning while taking on the assessor role (Sitthiworachart & Joy, 2007). Likewise, peer editing and peer teaching can be utilized through personal interaction and relational activities (Velez, Cano, Whittington, & Wolf, 2014).

According to Hill (2010), peer editing should provide student learning outcomes, feedback, and assessment that proves effective. Also, a positive and supportive learning environment needs to be created before administering peer-editing exercises for students. For peer editing to be effective, the instructor must be involved by providing guidance throughout the entire process (Hill, 2010).

**Peer Instruction**

Peer instruction is a teaching and learning strategy where students interact and learn from one another without initial, direct teacher assistance,
or intervention (Boud, Cohen, & Sampson, 1999). Moreover, peer instruction can be accessed through writing assignments, oral presentations, or product portfolios (Topping, 2009). Mazur (1997) discovered peer instruction was very successful with his students, who were becoming bored with his lectures. However, it required him to structure the format for the students and establish the process. To provide resources to support his seminal work, Mazur (2013) developed a comprehensive resource website, Peer Instruction (www.peer-instruction.net).

According to McKenna and French (2010), the use of peer instruction is increasing in the teacher education field. The authors suggested that peer teaching offers a wide range of benefits for the learners. In this study, as experienced students shared with novice students, the level of confidence increased between both of them. The less experienced learners appreciated the instruction from the peer teacher. Participants admitted that appreciation for teaching increased because of the peer teaching experience (McKenna & French, 2010). The study showed that peer teaching has many beneficial products. It assists in the development of self-confidence and provides opportunities for reflective practices for the peer teacher. Also interaction between the peer teacher and peer learner can result in reduced anxiety and increased practice opportunities.

Feedback

Discussion boards have served as opportunities for ongoing feedback regarding online course structure, content, and peer evaluation (Kleinman, 2005; Weller, 2002). Additionally, they offer ways for students to collect collaborative work and gain feedback on progress related to specific course activities (Weller, 2002). In a case study by Cartney (2010), the author expressed concern with the feedback learners are given and the feedback being utilized by students. Stressing the importance of establishing connections so that students are able to improve, Cartney gave suggestions on how to improve feedback between students. A workshop explaining the process, examples of the reviewed documents, or even a rubric could assist in proper feedback. This case study examined if peer assessments would help bridge the gap between the feedback received and the feedback that was used. Findings suggested peer assessments may be an avenue of providing communication between the learners.

Networking tools such as peer feedback can transform the learning process (Chen et al., 2011). These authors studied the effectiveness of using peer feedback to improve elementary student’s writing through blogging. They found that peer feedback through blogging was effective for editing articles and improving writing skills.

Building Online Community

Fulton and Riel (1999) defined a learning community as a group who shares a common interest in a topic or area and experiences an exchange of knowledge and collaboration. Because of the Internet, learning communities can now develop virtually. In fact, Gopez-Sindac (2004) suggested that teaching and learning delivered online can become a very effective, engaging, and interactive learning community. Similarly, Boettcher and Conrad (1999) believed it was possible to have an online learning community where the students help each other and collaborate to make decisions. Furthermore, Palloff and Pratt (1999) observed that it was students interacting together in an online community that led to knowledge transference.

Research showed that an effective online learning community was positively correlated to outcomes such as increased retention (Rovai & Baker, 2004). However, developing community in an online or blended class cannot be forced (Kleinman, 2003) nor does a positive community usually develop on its own (Shelton, Saltsman, & Bikis, 2006). Activities that foster robust and supportive online communities should be planned
and created prior to a course beginning (Palloff & Pratt, 1999; Roblyer & Ekhaml, 2000; Shelton, Saltsman, & Bikis, 2006; Weller, 2002). To further support the development of the learning community, the online course materials should emphasize student-to-faculty, student-to-content, and student-to-student interaction.

**Online Icebreakers**

Conrad and Donaldson (2004) reported that using icebreaker techniques in the online classroom have facilitated student engagement and interaction, thus building a sense of community. Furthermore, online course icebreakers offer opportunities for scaffolding technology, modeling online engagement, and creating a supportive, positive learning environment. Icebreakers can also lead to informal conversations and learner presence.

According to Conrad and Donaldson (2004), effective icebreakers must be carefully planned and not implemented haphazardly. The activity should be fun, nonthreatening and require the learners to respond to each other to start communication flowing. The learning community tends to develop more quickly when students get to know each other and begin to feel comfortable with their peers.

**Icebreaker Examples for the Online Classroom**

- **BINGO:** Create a Bingo activity after the first week of class and students have posted introductions in the discussion board. The Bingo card can be based on specifics for each student in the course. Students would have 24 hours to try to complete their card and would post their answers in the discussion board (Conrad & Donaldson, 2004). Similarly, instead of a Bingo card, a classmate quiz can be created based upon student introductions.

- **ONE WORD:** In the first week introductory discussion board, have students create a one word bio about themselves and then explain why they chose that. Students should then respond to those students’ whose words sparked an interest (Conrad & Donaldson, 2004).

- **SNOWBALL:** In the first week of introductions, direct the students to post their introductions one at a time. The second student must post their information and then find something in common with the first student. They can also be required to respond to several students that have posted similar interests (Conrad & Donaldson, 2004).

For more online icebreaker examples, see *Engaging the Online Learner* by Rita-Marie Conrad and J. Ana Donaldson.

**Flipped Classrooms**

Flipped classrooms or the flipped learning model is a teaching method where students watch video lectures and read material at home; then, during class time, they engage in active learning activities such as case studies, labs, games, simulations, or experiments (Herreid & Schiller, 2013). The flipped learning model, grounded in student-centered, constructivist, learning principles, is also frequently referred to in the literature as *inverted learning* (Baker, 2000; Bergmann & Sams, 2012; Davis, 2013; Finkel, 2012; Hamdan, McKnight, McKnight, & Arftstrom, 2013). An additional term, reversed instruction, has also been used interchangeably with flipped classroom and inverted learning to describe the manner in which students read material, watch video lectures from home, and then engage in active learning activities such as case studies, labs, games, simulations, or experiments during face-to-face classroom instructional sessions (Herreid & Schiller, 2013).
Recent notoriety of the flipped learning instructional approach emerged as a result of Bergmann and Sams (2012), Colorado high school chemistry teachers, who were struggling with student absences due to extracurricular activities. The teachers found excessive time was spent on reteaching concepts to the students who missed face-to-face class time. After conducting some research, the teachers pursued recording lessons in media formats such as PowerPoint and video, and making them available on the Internet as a form of homework. Then, the face-to-face classroom activities focused on the more traditional aspects of practicing the learning concepts, but in a hands-on, interactive approach facilitated by the instructor. Bermann and Sams (2012) found that not only did students who were absent view the videos, but also students regularly attending class viewed the recordings to assist with reinforcement of the face-to-face lessons. Tucker (2012) noted the implementation of engaging, interactive activities, using the flipped model, produced unexpected student reactions.

Although research studies regarding the effectiveness of flipped learning are limited, four researchers noted some positive effects of the flipped classroom model when examining achievement and motivation (Alvarez, 2012; Butt, 2014; Ferrei & O’Connor, 2013; Fulton, 2012; Strayer, 2012). Alvarez (2012) and Green (2012) reported a reduction in high school freshmen failures in core content areas at Clintondale High School in Michigan a year after the flipped classroom model was implemented. In fact, both authors documented a reduction in English failures from 52% to 19%; a drop in the number of math failures from 44% to 13%; a decline in science failures 41% from 19%; and less than 10% failure rate in social studies from approximately one-third in the previous year.

In yet another case study implementation at Byron High School in Minnesota, Fulton (2012) observed that after facing a financial crisis in 2009, the math department wrote a curriculum, implemented open source resources, and flipped the math classrooms. The results showed that teachers acknowledged greater student engagement and 73.8% of the student population taking the state exam passed the assessment. This passing rate more than doubled from the previous three-year performance rates. Additionally, ACT composite scores indicated an improvement to 24.5. Equally important was that 86.6% of the seniors enrolled in and completed more math credits than in previous years.

In a study by Strayer (2012), a classroom environment survey assessed student perceptions of a flipped introductory statistics course in a United States university. The areas of personalization, student cohesion, innovation, cooperation, task orientation, equity, and individualization were examined to determine whether the flipped classroom instructional approach was perceived as effective. When the survey results were compared with students from a traditional course, the data indicated the college students preferred the cooperation and innovation aspects of the flip classroom, but there was no evidence of other preferences.

In another university setting, Ferreri and O’Connor (2013) conducted a pilot study regarding the redesign of a self-care course which changed from a content-delivery methodology to a small-group format to enable better practice working in teams to apply information to a patient self-care scenario. The results showed students preferred working in teams and the academic grades significantly improved. Consequently, the course was redesigned to accommodate the student preferences of a flipped instructional model.

According to Finkel (2012), the flipped learning approach to instruction permitted the teacher to guide in-depth discussions and offers opportunities for students to seek clarity of concepts. With the initial instructional time being replaced by video and other media resources, it allowed additional time for instructors to develop and implement active learning activities better supporting the
application of learning concepts (Berrett 2012; Findlay-Tompson & Mombourquette, 2014). Hamdan et al. (2013) noted inversed instruction enabled educators to better informally assess student synthesis of material through the application of concepts and ensure greater levels of understanding. This process of using active learning assessments supported the work of constructivist pedagogy where students are challenged to explore concepts in greater depth based upon their personal level of development (Vygotsky, 1978).

The literature clearly denoted a number of beliefs and interpretations of what the flipped learning components should include (Baker, 2000; Bergmann & Sams 2012; Butt, 2014; Hamdan et al., 2013). However, Hamdan et al. (2013) narrowed the focus to identify four key pillars that permitted flipped learning, using active learning assessments, to be implemented in effective ways: “Flexible Learning Environment, Learning Culture, Intentional Content, and Professional Educator” (p. 5). The model detailed that traditional face-to-face classrooms should be flexible to permit rearrangement of space to provide engaging experiences through group work or independent study, thus maximizing the learning prospects in a blended learning approach. Furthermore, the deliberate cultural learning shift to using online resources, active learning assessments, and student-centered pedagogies offered greater opportunities for students to experience quality learning in personalized zones of proximal development (Vygotsky, 1978). This personalized learning required highly trained educators in the implementation of flipped learning strategies. These trained educators constantly evaluated student needs based upon performance on various, active engagement assessments, and made intentional adjustments to the content, skills, and concepts as needed to meet individual student needs (Bergmann & Sams, 2012; EDUCAUSE, 2012; Hamden et al., 2013; Herreid & Schiller, 2013).

### Flipped Learning Examples

- Present introductory video podcasts the night before the class engages in a case study, active learning assessment in a face-to-face setting (Herreid & Shiller, 2013).
- Watch video lectures accessible from home and participate in problem-solving scenarios in the classroom (Ruddick, 2012).
- Share content related video clips available online from home and interact with colleagues in experimentation (Berman & Sams, 2012; Herreid & Shiller, 2013)
- View videos from home, engage in question and answer sessions, and learn new content in the traditional learning classroom on an as needed basis (Simkins, Maier, & Rhem, 2009).
- Examine videos from home as a preparatory scene setting the stage to solve a problem during traditional instruction (Brickman, 2006).

### CONCLUSION AND RECOMMENDATIONS

The objective of this chapter was to provide faculty with alternative active learning strategies to potentially advance their personal skill sets and to embrace learner-centered instruction with use of technology tools for online and blended environments. Indeed, much has been written about passive and active learning since Piaget’s (1972) theory of Cognitive Constructivism and Vygotsky’s (1978) Social Constructivist Theory provided the foundation for a broad constructivist learning theory, also called constructivism. Furthermore, the literature clearly supported a number of engaging learning strategies and methods embracing the foundational constructivist assumptions outlined by Smith and Ragan (1999): “Knowledge is constructed from experience;
Learning results from a personal interpretation of knowledge; Learning is an active process in which meaning is developed on the basis of experience; Learning is collaborative with meaning negotiated from multiple perspectives” (p. 5). Accordingly, each of the active learning strategies and approaches discussed in this chapter were built on constructivist principles where learning supports the work of constructivist pedagogy and students are challenged to explore concepts in greater depth based upon their personal level of development (Vygotsky, 1978).

Specifically, educators should expand the implementation of active and collaborative learning processes guiding the development of course content and contextual meaning as they have been found to improve higher order thinking skills and encourage shared exploration in the use of technology tools, resources, and content (Brindley, Walti, & Blaschke, 2009; Jonassen, Davidson, Collins, Campbell, & Haag, 1995; Simiens, 2002). Because a growing body of evidence indicated that inductive teaching and learning methods such as simulations, role playing, problem or project-based, and case-based learning increased learning gains more than traditional lecture methods (Hovancsek, 2007; Prensky, 2007; Prince, 2004), educators should take steps to incorporate these strategies and approaches into online and blended learning environments. More than ever, in both K-12 and higher education, constructivist teaching methods and active learning strategies are utilized to better prepare digital age students.

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**KEY TERMS AND DEFINITIONS**

**Case-Based Learning:** Case-based learning is described as self-narrated stories (case study) that were written and analyzed for classroom purposes.

**Flipped Classroom:** A teaching method where students watch video lectures and read material at home; then, during class time, they engage in active learning activities such as case studies, labs, games, simulations, or experiments (Herreid & Schiller, 2013).

**Inverted or Reversed Learning:** The manner in which students read material and watch video lectures from home and then engage in active learning activities such as case studies, labs, games, simulations, or experiments during face-to-face classroom instructional sessions (Herreid & Schiller, 2013).

**Peer Teaching:** A strategy where students interact and learn from one another without initial, direct teacher assistance, or intervention (Boud, Cohen, & Sampson, 1999).

**Problem-Based Learning:** A learner-centered approach that encourages students to research, integrate theory with practice and apply knowledge learned to solve a problem (Savery, 2006).

**Project-Based Learning:** (Similar to Problem-Based Learning) A learner-centered approach to teaching and learning that requires students to research, solve a problem, and create a presentation outcome.

**Role Playing:** A type of communication and teaching method that involves a person imagining to be a character in a defined situation (Van Ments, 1983).

**Scenario-Based Learning:** An approach to teaching and learning that stimulates deep learning and engagement through participation and involvement in realistic situations with reflection upon the outcomes and learning (Errington, 2005).

**Simulations:** Computer or online programs that attempt to replicate an authentic system, event, or process and where learners interact with the simulation (Alessi & Trollip, 2001; Blake & Scanlon, 2007; de Jong & van Joolingen, 1998; Moizer, Lean, Towler, & Abbey, 2009; Mislevy, 2011).
Chapter 5

Cultivating Community in Online and Blended Learning Environments

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ABSTRACT

The popularity of social media networking sites like Facebook and Twitter demonstrates how communities can develop and flourish in virtual spaces. How can higher education institutions and instructors leverage the power of community to enhance student learning without compromising the rigor that is foundational to the academy? Building on the scholarly literature and their own experiences teaching and providing faculty development in online and blended learning environments, the authors provide a rationale for cultivating community in online environments as well as provide descriptive cases of instructors who have effectively used a learning management system to cultivate vibrant learning communities in online and hybrid courses. They also offer multiple faculty development models for helping faculty develop a social, teaching, and cognitive presence in online environments.

INTRODUCTION

A Rationale for Cultivating Community

With an estimated 96% of public and private colleges and universities now offering online courses (Allen & Seaman, 2006), it is not surprising that the academic community has seen increased research, writing, and professional development related to effective online teaching and learning. Since dropout rates among distance education students are 10-20% higher than those of students in traditional face-to-face courses (Carr, 2000), one research focus has been related to identifying and mediating factors that might contribute to student success, satisfaction, and persistence in online courses. Researchers have identified a feeling of isolation as one factor associated with higher dropout rates among online
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students (Galusha, 1997; Kubala, 1998; Soles & Moller, 2001). Some researchers contend that psychological distance, or lack of community, in the online learning environment, can result in student isolation, frustration, boredom, overload, and low course completion rates (Hara & Kling, 2000; Northrup, 2002; Rovai, Wighting, & Liu, 2005). On the other hand, Ascough (2007), Cho, Gay, Davidson, and Ingraffea (2007), as well as Pate, Smaldino, Mayall, and Luetkehans (2009) found that creating online social communities creates an encouraging environment of shared activities that results in deeper learning, higher final course grades, and successful online courses.

Functioning in a community can enhance learning, improve academic success, and contribute to persistence in higher education (Hargis, 2005; Kember, 1987; Powers & Mitchell, 1997; Shea, Li, & Pickett, 2006). Yuen (2003) asserts that a learning community can help individual learners “achieve what they cannot on their own” (p. 155). Most researchers point to the instructor as the critical player in cultivating a sense of community in online courses. Rovai et al. (2005) as well as Liu, Magjuka, Bonk, and Lee (2007) found that instructors who facilitate a sense of community and student engagement significantly affect student satisfaction and quality of online learning. According to Ascough (2007) and Liu et al. (2007), a welcoming teaching and learning community is central to online student knowledge acquisition, which in turn leads to meaningful learning experiences.

Online courses create unique environments that require instructors’ thoughtful care to help students become engaged in their learning and to design virtual classrooms that enhance a sense of community (Meyers, 2008). According to Berge (2002) and Northrup (2002), when instructors carefully plan ways for students to interact, students are less likely to experience feelings of isolation and frustration and can, therefore, focus on achieving course learning goals. Students who learn the most from online courses have online instructors who provide a structured and comfortable classroom environment that involves the participation of everyone in the learning activities (Young, 2006). Oriogun, Ravenscroft, and Cook (2005) and Liu et al. (2007) posited that online student collaboration provides opportunities for students to realize their potential through meaningful engagement, which may ultimately increase student persistence rates in education. Teaching strategies that promote classroom community with free and open communication facilitate the personal engagement of students, which in turn may enhance the quality of student learning (Meyers, 2008).

Mandemach (2009) proposed that student engagement depends primarily on a number of factors, including an instructor’s personal connection with students and their creation of an active online environment. Mandemach, Gonzalez, and Garrett (2006) asserted that students’ sense of instructor presence is most influenced by teaching presence, instructor immediacy, and social presence. Teaching presence involves opportunities for frequent and effective interaction with the course instructor. Instructor immediacy refers to the behaviors that enhance closeness and interaction. O’Sullivan, Hunt, and Lippert (2004) found instructor immediacy is increased with behaviors such as initiating discussions, asking questions, using self-disclosure, addressing students by name, using inclusive personal pronouns (we, us), repeating contacts with students over time, responding frequently to students, offering praise, and communicating attentiveness. They also noted that visual cues (e.g., color, graphics, or an instructor’s picture) signal expressiveness, accessibility, engagement, and politeness. Social presence is the degree to which participants in computer-mediated communication feel affectively connected to each other. In a study examining correlates of online classroom community and student engagement, Young and Bruce (2011) identified three factors that contributed to students’ feelings of community and engagement within the course: 1) community building with the instructor, 2) community
building with classmates, and 3) engagement with learning. Huss and Eastep (2013) examined students’ perceptions of online learning at a Midwestern university. Survey items asked students to report on learner-instructor interactions, learner-content interactions, and learner-learner interactions. Overwhelmingly, students rated instructor presence and interactions as most important to their satisfaction. In open-ended items about successful and unsuccessful practices in online courses, students’ responses focused on either the presence or absence of community-related elements as critical to their success and satisfaction. Specifically, students spoke to the necessity for clear instructions, timely responses, and instructor availability. In sum, researchers have committed to understanding the community phenomenon in online courses because students’ sense of community can increase retention, learning, engagement, and overall satisfaction. Overwhelmingly, they have found that student satisfaction and learning are concomitant to the instructor’s effort, ability, and success at cultivating community in the online learning environment.

A body of work initiated by Randy Garrison and his colleagues has informed many of the studies related to community in online courses (Garrison, 2007; Garrison & Anderson, 2003; Garrison, Anderson, & Archer, 2000, 2001; Garrison & Arbaugh, 2007; Garrison & Archer, 2000; Garrison & Cleveland-Innes, 2005; Garrison & Vaughan, 2008). Grounded in the work of John Dewey’s progressive conceptualization of education (1933, 1938, 1959), Garrison, Anderson, and Archer (2000) developed the Community of Inquiry (CoI) theoretical model of online learning (See https://coi.athabascau.ca/). CoI, a process model of online learning, represents the online educational experience as arising from the interaction of three presences: social presence, cognitive presence, and teaching presence. Each of these core elements is multidimensional, and the three are interdependent. At the heart of the CoI framework is the idea that community, critical reflection, and knowledge construction are integral to learning, especially online learning. The CoI model has guided our inquiry about best practices in cultivating community in online and hybrid courses. To understand the CoI framework, it is critical to understand the three core elements of social presence, cognitive presence, and teaching presence. Swan, Garrison, and Richardson (2009) provide a comprehensive description of the CoI model, including its theoretical underpinnings and core elements. Garrison, Anderson, and Archer (2001) defined cognitive presence as the extent to which learners are able to construct and confirm meaning through sustained personal reflection and shared discourse. Social presence is the degree to which participants in computer-mediated communication feel affectively connected to each other. Teaching presence is the instructor’s design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes. As mentioned, each core element is complex and multidimensional – and then the three together are interdependent. In a single activity, online teachers and students can exploit many aspects of the core elements to cultivate a sense of community.

In this chapter, we contend that “community” in online and hybrid courses does not happen by chance. Rather, community must be intentionally “cultivated” by members of the virtual learning environment. Specifically, like so many of the researchers cited here, we maintain that instructors in online and hybrid courses are the chief cultivators of community. In an agricultural sense, cultivation connotes hard work, digging, stirring, fertilizing, and otherwise working the soil to ensure a successful crop. Failure to make the initial investment in time, money, and sweat can be detrimental to the life of crops, livelihood of cultivators, and health of consumers. Similarly, we argue that cultivating community in teaching and learning, regardless of environment, is important work. In online and hybrid environments, the
tools of cultivation are different from those used in face-to-face courses, but the work is at least as intense. We will discuss the three core elements of the CoI model, providing examples of methods for promoting each presence type within the course management system. We will use our preferred term, learning management system (LMS), to refer to the software application used to deliver course content and provide online activities for students. Moodle is the LMS used in these cases, but the activities and practices described could be used in similar platforms. In this chapter, we will provide descriptions of instances within courses at our university where instructors have worked to cultivate community using the LMS platform. Following the description of each example, we will provide commentary about how interactions within the course are representative of social, cognitive, and teaching presence in the Community of Inquiry framework. In the discussion, we will also provide examples of faculty development models that are promising for helping instructors develop their community-building capacity. Our goal in developing and sharing these examples and interpretations is to stimulate discussion about ways communities are created and sustained in online course environments.

**AUTHORS’ PERSPECTIVES AND EXPERIENCE**

The authors of this chapter have been working together for approximately two years on course design and research projects related to the university-sanctioned LMS. Emory Maiden is a university instructional designer who has experience as a student in multiple online graduate courses that have used a variety of technology tools for delivery of course content. In his university position, he assists faculty in designing courses and using the Moodle LMS with students. Tracy W. Smith is a veteran faculty member in the area of education and curriculum design at the same university. She uses the LMS to deliver hybrid and online graduate courses and focuses her own work and collaboration with colleagues on the importance of community in courses, regardless of delivery method. Much of these authors’ work has resulted in facilitating experiential professional development for other faculty developing courses for online and hybrid delivery. In their collaborations, both have variously served as expert, either with technology tools, curriculum design, research methodology, or course content. This partnership has yielded exemplars of course design and professional development as well as a model of sustained professional development and co-mentorship.

Recently, we have begun collecting survey data related to students’ perceptions of online experiences at our university. These data are confirming what the literature says about the importance of community and interactivity in online environments and is helping us to think about the critical nature of cultivating community within our LMS.

One common theme among the student feedback has been related to instructors’ engagement in the course discussions and responsiveness to student questions. One student, indicating a lack of satisfaction in the course and the sense of community, stated by way of explanation that the instructor “often does not respond to student questions at all, and when a response is given, it’s often vague and not relevant to the question.” Another student indicated that she considered dropping out of the program as a result of the lack of instructor responsiveness stating that the instructor “made college much more difficult for me than it had to be… I am so disappointed.”

On the other hand, students often credited the feeling of community and the responsiveness of the instructor as positive factors. One student stated, “Whether it is a webinar, our virtual coffee shop, or weekly forums, the professor has done a great job at having a voice in our conversations.” Another student valued “the instructor’s quick responsiveness and willingness to help me improve.”
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Students’ comments focused not only on instructors’ engagement and responsiveness but also their inclusion of course activities that encourage ongoing student interaction with classmates. A student reporting positive experiences in the course points to the course forums stating, “Every week we post to a forum and then have to respond to two other posts. This is a great way to engage in virtual conversation with peers.” This student’s characterization of course forums as “a great way to engage in virtual conversation with peers” suggests her desire to engage in activities that build social presence and connection among participants in the online course. Students lacking opportunities voiced their concerns that “there was NO participation at all in our course. We simply read the chapter and did the corresponding exercise. I could have gotten the same information from reading the book on my own.” Since ongoing discussion related to course concerns is an important part of developing group cohesion in a community of learners, lack of opportunities to interact can amplify students’ feelings of isolation and therefore jeopardize students’ sense of social presence in the online environment.

Some student respondents, noting the absence of instructor-created opportunities to interact with classmates in their online courses, explained that they had sought other means for communicating with classmates. One student commented, “I do wish there was a common discussion board throughout online courses. An open discussion board where we could go in as students and ask for help and others could respond. There were times that I did email a few of my classmates when I had questions on certain assignments. This did form an online friendship for the semester, but I do wish there would have been an open discussion topic for questions.” Another student, reporting that there were no student-to-student discussion opportunities within the course, indicated that she had “often emailed students in my courses directly to ask for help or offer guidance.” By way of explanation, in our LMS, a persistent feature is a one-way News Forum, where instructors can post communication to students. However, students cannot reply to this forum. If instructors want an interactive forum, they must set up additional forums that allow for two-way communication. In some cases, students have resorted to establishing or participating in social media groups (e.g., Facebook, Twitter) so that they can interact about course concerns or questions.

Some students cited synchronous web-conferencing as a positive strategy for building community. One student specified, “Blackboard (Collaborate) is a great program for active participation. I love the raise hand feature, as well as the check or x. These work well for quick formative assessments and keeping the participants engaged with the instructor.” Another student, in a different course, provided similar commentary: “The webinars through [B]lackboard were very successful. I love the multiple opportunities to get involved in the discussion (raise virtual hand, check mark, x mark, talk, type).” The instructor lead web-conferencing session allows students the opportunity to connect and interact with both the instructor and peers in real-time. The invitation to participate in synchronous communication can provide a needed sense of connection and presence for some students and can even simulate familiar experiences and protocols (e.g., raising hands to speak) they know from face-to-face interactions in physical classrooms. Preliminary analysis of feedback from students suggests that the courses with student-to-student interaction opportunities received more positive comments related to the sense of community than courses lacking similar opportunities.

Instructors’ course organization and design was another factor affecting students’ sense of community in online courses. Anderson, Rourke, Garrison, and Archer (2001) discussed design and organization as a dimension of teaching presence. They grounded their discussion of teaching presence in John Dewey’s notion that teachers must provide purpose, structure, and leadership in the
learning process—and that they must give attention to the organization of the social environment to maximize students’ learning potential. Similarly, students at our university reported a need to feel secure in the organization of their virtual classroom environment. Students who perceived their courses as structured and organized reported higher levels of overall satisfaction and learning than those who felt their course or instructor was not organized. On the positive side, students affirmed satisfaction when “course expectations and procedures were clear” and “The design of the course makes sure that we all interact with each other.” One student linked the course organization to his dispositional state toward learning: “Organization of the material is huge in helping me create an optimistic and enthusiastic outlook.”

Conversely, students reporting dissatisfaction in the course community point to problems in course organization. When asked about the course experience, one student responded, “No communication, unorganized. Almost as if the professor forgot that he has an online course.” Courses lacking deliberate attention to the structure and organization dimension of teaching presence seemed to lack the sense of connectedness students desired.

Boettcher and Conrad (2010) describe four phases of online courses and in their elaborations describe the learner and faculty behaviors and experiences for each phase:

**Phase 1:** Course Beginnings – Starting Off on the Right Foot;

**Phase 2:** Early Middle – Keeping the Ball Rolling;

**Phase 3:** Late Middle – Letting Go of the Power; and

**Phase 4:** Closing Weeks – Pruning, Reflecting, and Wrapping Up.

In Phase One, the role of the faculty mentor is to establish quick trust; promote social presence; get acquainted with learner backgrounds, points of learner readiness, and personal learning goals; ensure that all learners are present and engaged; make course expectations clear and explicit; provide details about instructor expertise; and model cognitive processes for learning course content. If the course is not “launched” well, the rest of the journey is compromised. In their comments and explanations, students at our university confirmed the importance of instructors’ deliberate attention to a successful course beginning and intentional design. They valued clarity and organization in course design and communication. Though the LMS provides many tools for discussions and activities that cultivate community, what seemed to be more important than the kind of activity planned (i.e., discussion boards, blogs, and web-conferencing) was that instructors were intentional in their planning and course design to provide opportunities for interactivity and responsiveness.

Both the literature and the feedback from students suggest some best practices for designing and leading activities in a course where community is present and sustained within the learning management system. Our questions yielded confirmatory evidence from students that they do value social, cognitive, and teaching presence in their online learning activities.

**BEST PRACTICE CASES**

In our work as faculty development providers, instructional designers, and collaborators with others in teaching online and hybrid courses, we have access to many courses within our LMS platform. At times, others assign us the “teacher role” in their classes so that we can observe, collaborate, and/or provide feedback. Given this access, we are able to witness many exemplary practices and their results within a variety of courses. Here, we will describe the practices of three instructors who have done the work of cultivating community within the LMS. These instructors have been active in pursuing professional development to improve their online and hybrid teaching. In fact, with a
group of about five others, they participated in an experiential learning opportunity, taking a hybrid course about teaching hybrid courses. Each of them developed a hybrid course that was reviewed by instructional designers as well as a content expert at our university. All three instructors are female tenure-track faculty in our College of Education. We understand that their backgrounds may not be typical or representative of all higher education faculty; however, more than to provide a representative sample, our goal is to describe multiple different best practice approaches for cultivating community in online environments. With each case, enough detail will be provided to give the reader an idea of the tools used by the instructors as well as the demeanor of the interactions because both are critical to understanding the practices. In addition, when it is illustrative, we will describe or provide examples of student responses. Finally, we will provide an interpretation of each case or practice based on the three types of presence that comprise the three core elements of the CoI model: social presence, cognitive presence, and teaching presence.

Undergraduate educational assessment course. All undergraduate students at our university who are studying to become teachers take an educational assessment course. Students in the course include education majors from up to 20 different programs (e.g., birth-kindergarten, elementary, middle grades, secondary mathematics). In this course students learn how to develop and articulate learning targets for their future K-12 students based on grade level and content curriculum. In an online section of the course, Dr. Jayne McIntire (instructor pseudonym) had students write a reflection about the week’s topic, including how they think they might use the practice (formative assessment) when they become teachers. Dr. McIntire compiled all the individual reflections into a document and then used Wordle.net to create a collective representation, or word cloud, of the reflections. In the course block for the following week, Dr. McIntire created a webpage directing students to “Click here, then click the image to see a Wordle of your Self-Reflection Themes.” She provided an image of the Wordle and this description: “I used Wordle.net to combine some of the most powerful statements from each of your self-reflections. It was interesting how the word ‘students’ came up most often, highlighted by other themes like ‘learning’ and ‘need.’ It shows that all of us had common thoughts about the need for formative assessment and how that is useful to our students.”

With this simple activity, Dr. McIntire demonstrated both social and teaching presence. By creating a summary representation of the individual responses, Dr. McIntire helped students feel connected to one another (social presence). She was cultivating affective expression and group cohesion, two categories of social presence. In addition, she was facilitating discourse, a critical dimension of teaching presence. She also promoted metacognitive awareness by highlighting the common themes among students’ responses.

In this same course, Dr. McIntire created a webpage agenda for each week’s learning activities. Frequently, she also provided short video presentations to clarify content or directions for activities. In the videos, Dr. McIntire usually shared her screen and modeled what students were expected to do independently or in collaborative groups. She showed humanity by making comments such as “Sorry, my computer is running slow” and “Oh, I can tell it’s early. My brain isn’t working clearly yet.” Students were able to hear the instructor’s voice and even view her desktop. The video viewing increases students’ sense of social presence in the course, as it is demonstrated in affective indicators such as humor and self-disclosure (Swan, 2003). Furthermore, the weekly
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webpage agenda provides a consistent design and organization convention that students can expect as evidence of Dr. McIntire’s presence in the course.

Also, in this course, Dr. McIntire promoted question-asking and collaborative learning with prompts for discussion forums such as the following:

After reading the resources provided for this week AND watching the videos about NC accountability and testing, write 3 questions that you still have about this system along with any reaction you might have.

When responding to your peers, try to answer their questions with information you might know.

Here, Dr. McIntire provided clear expectations with regard to discourse, which Anderson et al. (2001) have cited as a dimension of teaching presence. This forum provides an example of an activity for which the teacher may need to respond to students’ responses with direct instruction, correcting any misconceptions that students have, either in their initial questions or in their responses to each other. Direct instruction is a critical element of teaching presence and is closely linked to students’ capacity for cognitive presence. If the teacher is not active and “present” with this forum, students may ask questions about accountability and testing, and other students may offer responses with inaccurate information. Since students are asking questions and revealing what they do not yet know or understand, it is important that Dr. McIntire monitor and participate in the discussion so that cognitive presence can be fostered. Garrison and Arbaugh (2007) and Akyol and Garrison (2008) warn that students in online discussion forums often remain in an exploration phase of cognitive development, sharing and brainstorming information without integrating or resolving discrepancies regarding new content learning. Meyer (2003), Murphy (2004), and Shea and Bidjermo (2008) argue that explicit facilitation and direction from an instructor can move students to deeper meanings and an enhanced sense of cognitive presence. In the example provided here, the instructor has developed a task that enables students to develop their cognitive presence. However, if the instructor does not participate actively, students’ misconceptions could persist and even extend to others.

Graduate instructional technology course. Dr. Dahlia Goodson (pseudonym), the instructor in a graduate instructional technology course, makes her social presence evident as soon as students login to her LMS site. On the course “front page,” Dr. Goodson has included engaging images and quotations, signifying what is important to her professionally and inviting inquiry among the members of the course. For example, she has included the following quotations that are immediately visible in her course:

What is important is not what the technology can or cannot do, but rather whether or not the technology serves teaching and learning and the complete instructional process. (Paul Saetter, The Evolution of American Educational Technology, 1990)

Man is limited not so much by his tools but by his vision...our problem today is that our tools are there, but our vision is limited. (Pascale and Athos, The Arts of Japanese Management, 1981)

These two quotations may provide what Garrison, Anderson, and Archer (2001) designate a “triggering event” because they stimulate students in a shared world of online discourse to consider an issue and then shift to a posture of exploration in order to resolve a perceived dilemma. Here, the Saetter quotation asks readers (Dr. Goodson’s students) to consider and evaluate the purposes of technology in education, not just to avail themselves of its functions. The second quotation invites students to consider their own vision and the visions of those who lead them. Students may also consider these statements from
within their cultural and historical contexts. What is clear is that the instructor has selected “triggering” content that invites exploration, reflection, and shared discourse in a Community of Inquiry. By including quotations and images on her LMS homepage, Dr. Goodson reveals some details about her identity. Right away, students can begin to make connections to her. Of all the quotations she could have chosen, she chose these. Already, curious students can make hypotheses about their teacher and the ideas that will be explored in this course. To continue with our cultivation metaphor, Dr. Goodson has prepared the “soil” and has begun to create an environment where students can learn and flourish in community.

Dr. Goodson also uses asynchronous discussion forums to cultivate community. In addition to topic-specific discussion forums, Dr. Goodson creates discussion forums that are not specific to a particular assignment or task. In her course, she includes an “Ask the Instructor” forum that allows students to ask questions directed at the instructor. She can respond within the forum so that the communication is open and disseminated to all enrolled students. This approach also increases instructor efficiency because Dr. Goodson is providing information to all students in the course at once rather than replying to multiple, similar emails from students. In addition, the instructor has a “Break Room” forum. She describes this forum to students as follows: “This forum is like the water cooler, break room, or teacher’s room. Use this space to post concerns/questions/ideas related to the course or other issues in technology and education that are on your mind. It may be a helpful place for brainstorming and connecting with each other as well.” It seems noteworthy that the instructor’s invitation for brainstorming and connecting promote both cognitive and social presence. “Brainstorming” and “sharing” are early manifestations of cognitive presence, in which students are forming issues, problems, or dilemmas that need resolution. With appropriate facilitation, students can enjoy more advanced interactions with other members of the community and with the course content. The instructor here also invites connections among community or course participants. The invitations to brainstorm and share imply connecting students’ private world of reflection and contemplation to the public world of discourse (See Practical Inquiry Model, Garrison, Anderson, & Archer, 2001). Discourse is developed as the codified language of a field of inquiry. In the context of an online course, much of the interaction is text-based, so written language becomes the strongest mediator of developing discourse leading to deeper understanding of course content. Both of Dr. Goodson’s open forums provide interactive spaces that promote “cohesive indicators,” one of the social presence indicator types examined by Swan (2003). As the course continues, students have a sense that they can interact with other members of the course to seek support and ask content-laden questions.

Many instructors in online courses ask members of the course to introduce themselves in a discussion forum. In one online course at our university, the prompt for the Who Are We discussion forum is this: “Post a short bio of yourself, including info about your life, such as where you live, pets, work, family, hobbies, interests, favorite book/movie/music, etc. Read postings of classmates and think of one question you would like to ask a fellow classmate. Post your question. If a question is directed to you, answer it.” Students in online courses have told us that after being asked this same type of prompt in each online course, they have set up a file from which they can simply copy and paste a standard response. Because the responses become very text-laden, students have also told us they soon lose interest in reading their classmates’ responses. In her instructional technology course, Dr. Goodson provides a slight but powerful modification to the “Who I Am” forum. It is significant that this instructor is pursuing her own line of inquiry asserting the importance of place and space in online communication. She maintains that it is
critically important for students who meet in virtual spaces to remember and recognize that members of their virtual communities are also members of communities in physical places that matter. Her research perhaps raises her awareness about the importance of cultivating community and minimizing transactional distance through meaningful interactions in virtual spaces.

Dr. Goodson’s introduction forum, titled “Who Am I?” asks students to “Post a PowerPoint with 3 images that represent you with a short paragraph describing yourself (NOTE: This could be turned into a video, if you wanted to upload one here).” In the instance of the course we observed, Dr. Goodson had uploaded her slides first, calling the set of three slides her PowerPoint Autobiography. Here is the commentary included with her three slides:

Slide 1: This is a picture of me taken a couple of weeks ago. I’m the “foreman” in the kids’ construction site at the Children’s Museum. I included this photo to show you that though we all take our work very seriously in this class, we also have other parts of our lives that bring us lots of joy. This class can have room for both. ☺

Slide 2: This is my wonderful family: my partner Aaron, and the two kids we raise together, Ella, 5 and Silas, 3. My sister also lives in town, which is lots and lots of fun, too.

Slide 3: In my professional life, I study how young people use media and what they produce using media tools. This picture represents how our little girl represents herself and her family using the simple tools of a Whiteboard and markers. These types of media productions can tell us a lot about kids and how they learn.

My past work has been studying how young people create movies about their lives in non-profits across the United States. Now, I am also interested in how teachers use technological tools in their own teaching and their own professional learning.

This class bridges both interests as we discuss both students and teachers (and other professionals).

Dr. Goodson used this activity to address the connections students might have to place in a virtual learning space. She states, “I feel that people come from particular places, and even more importantly, they are particular people in those places. Therefore, though we are teaching and learning in an online learning space, we still bring our places, and who we are in those places, into that space. Having the students post images from those places that show who they are is a way to bridge the place they come from and who they are with the space they are in when participating in the online class. With still images, we can see who they are in multiple examples of place.” Dr. Goodson demonstrated all three of the dimensions of teaching presence described by Anderson et al. (2001). By modeling the assignment, including the selection of images, the provision of annotations for the photos, and the uploading of the slides into the forum, the instructor provided direction about design and organization. By using images from her personal life to illustrate concepts about media use and representation and inviting students to do the same, she was initiating and facilitating discourse. By explaining that simple tools such as a whiteboard and markers can be used to create a media production, she was providing early direct instruction about course content and definitions of media. In addition, Dr. Goodson cultivated the social presence element of community. Her self-disclosure, sharing of family values, and even use of an emoticon (Tu & McIsaac, 2002) contribute to the social presence being cultivated in the course.

In kind, students created PowerPoint slides and commentary characterized by affective indicators such as self-disclosure, humor, and representation of values. Specifically, the student PowerPoint postings and images demonstrated their family structures (e.g., adoption, siblings, marital status, children); secret identities (e.g., World Champion Powerlifter, Cat Lady); passions and obsessions (e.g., organizing, bringing fine arts to
rural communities, family, public service, football, NASCAR, Broadway plays); favorite quotations; musical talents (e.g., playing saxophone, piano, and guitar); travel destinations (e.g., Bahamas, Jamaica, Guatemala, European countries); hometowns; hobbies (riding motorcycles, hunting, fishing, ice skating, riding horses, playing golf, doing Zumba, gardening, cooking, and creating art projects). One student even used this forum to announce her engagement.

In responses to each other, students made connections about siblings and children, types of pets, places traveled, family members serving in the military, common undergraduate experiences, spouses’ careers, musical talents, exercise passions, career joys and challenges, twin siblings, and best professional practices and experiences. Swan (2003) characterizes such connections as interactive indicators that help community members identify and seek acknowledgement, agreement and disagreement, approval, invitation, and personal advice. Since most experts and researchers agree that social presence is a necessary precursor to cognitive presence in online learning (Garrison, 2007), it is significant that Dr. Goodson is using social presence and teaching presence to establish a foundation for establishing and enhancing cognitive presence.

Graduate course on educational law and policy. Dr. Teresa Sullivan taught a summer session course on Educational Law and Policy. Students met face-to-face about once per week, which was just fewer than 50% of the typical seat time for a summer graduate course. Dr. Sullivan created a Virtual Coffee Shop to allow two-way communication between her and the students – and to maintain connections between face-to-face meetings and online interactions. In this particular group, Dr. Sullivan was an outsider. The students had been taking classes together as a cohort for two semesters before they had this class with Dr. Sullivan. The students had already developed a social presence in the cohort. Dr. Sullivan used the Virtual Coffee Shop forum as a space for asynchronous interaction in the course. To assert her teaching presence, Dr. Sullivan posted in the Virtual Coffee Shop every few days. This section provides dated messages that Dr. Sullivan posted in the Virtual Coffee Shop, followed by commentary related to the type of presence that is illustrated in the text.

Virtual Coffee Shop

Instructor Post from May 9

I have posted this message in the Virtual Coffee Shop forum for our course. This is a virtual sharing space for all of us. Unlike the regular news forum, this forum allows students to reply. I encourage you to use this space to post announcements of interest to the group, pleas for help or resources, ideas for feedback, etc.

In the orientation section of our course, I have posted some videos for you to watch prior to our meeting next week. I’m no famous movie producer, but I hope the information provided would be helpful and save us some time in our precious face-to-face meeting next week. I know most of you know each other well, and I know a couple of you, but I am looking forward to spending some time learning together this summer.

Please send me any questions you have - or I’ll respond to questions about the syllabus, assignments, and other items that pertain to everyone when we meet next week.

Commentary: This post illustrates an effort to cultivate social presence with language such as “sharing space,” “announcements of interest to the group,” “pleas for help,” and the acknowledgement that “most of you know each other well.” Teaching presence is illustrated in Dr. Sullivan’s effort to create and post videos for students to watch prior to the class meeting. These videos provided an overview of the syllabus and other expectations of the course, characteristic of the design and organization dimension of teaching presence (Anderson et al., 2001).
Instructor Post from May 13

Hi, everyone. Thank you to the five of you who have completed the background questionnaire. I hope the rest of you might find time to do that soon. It is helping me to know a bit about your background and current positions as I finalize plans for the course. Also, as a reminder, [the LMS] will be down for a while tomorrow, so if you try to login and have problems, please be patient. I’ve been promised all will be ready (or our tech folks will create a Plan B) for our meeting tomorrow evening. I’d love for you to update your [LMS] profile with a photo so that I can learn your faces and names more quickly. See you tomorrow!

Commentary: This post implies that Dr. Sullivan had created a questionnaire for students to complete prior to the first class meeting. She acknowledged those who had completed the task (interactive indicator of social presence, Swan, 2003) and provided information about how she would use the information to plan the course, suggesting that she would consider their authentic contexts and problems to promote higher levels of cognitive presence. She gave students advanced warning that the learning management system service would be interrupted, thereby directing and clarifying their use of the learning tool. She asked students to update their profiles and include photos and interjected that she wanted to know their names and recognize their faces (social presence).

Instructor Post from May 18

Hi, everyone. Happy Saturday. It’s a rainy day here in [university town]. I am seeing that your posts are beginning to come in. I am glancing at each one as they show up in my email. They are looking great - very informative for our entire learning community as we prepare to be movers and shakers in our respective policy environments! You’ve selected some important terms to define for each other for Part I. I hope you’ll take time to read each person’s post, though you don’t need to respond to all of them. The idea is that we will all learn more as we read those definitions and ideas. Please be sure to provide a thorough answer to your own question for Part II. We are involved this weekend in a 25th Anniversary Celebration of our daughters’ school as well as a church community service project all day tomorrow. I didn’t want you to worry if you didn’t hear from me until Monday. I’ll be reading your posts more thoroughly then, and I’m looking forward to it.

I hope Thursday’s class went well and that you are working out the details of your internship. You guys are on the home stretch now! How exciting. I’m happy to be spending some time with you at the end of your journey.

Commentary: Dr. Sullivan commented on the weather in her physical location, thereby affirming that she is a real person in a computer-mediated environment. She exists in a physical place. She let students know that she was reading their work but then self-disclosed a detail about her weekend (social presence). She affirmed students’ power to affect change in the places they live and work (real circumstances and cognitive presence). She promoted the idea that, in this forum and this course, “We will all learn more as we read those definitions and ideas.” She let students know when they could expect her to focus on their work (teaching presence). Finally, she acknowledged the importance of this course in the context of their program and expressed her emotional state (affective indicator, social presence) about their shared journey.

Instructor Post from May 27

As mentioned in your syllabus and in our course orientation, I will schedule some Sunday evening synchronous virtual class meetings as needed. I thought you might need a meeting this week prior to our next face-to-face (F2F) meeting, in case you have some last-minute questions about your legal memorandum or quiz questions that are due.
on Tuesday, June 4. In the meantime, feel free to email your questions. Also, I have set up a forum for sharing drafts of legal memoranda. Please feel free to post your work and request feedback. We are in this together, right?!

I will be online fifteen minutes before we begin. The link for our session is in this week’s course block. The webinar “room” is open right now if you would like to click on the link to access the room. It would be great if you can check the machine you plan to use prior to Friday afternoon so that I can request technical assistance for you if needed.

**Commentary:** In this post, Dr. Sullivan reminded students of the original design of their course and the opportunity for synchronous virtual class meetings. The three dimensions of teaching presence (Anderson et al., 2001) of design and organization, facilitating discourse, and direct instruction are all exemplified in the opportunity for the synchronous meeting. Dr. Sullivan gave students an opportunity to interact synchronously online with a platform that allows speaking aloud and text chatting, thereby providing an opportunity for public discourse. She also mentioned an assignment that was due soon and offered to provide direct instruction related to the format and content needed for the assignment. Dr. Sullivan mentioned a forum students could use to share drafts and provide feedback. She fostered group cohesion and social presence when she stated, “We are in this together, right?!” She inserted teaching presence and support when she offered technical directions and support related to web conferencing.

**Instructor Post from June 4**

For our class next week, I need four sheets of white bulletin board paper. You know how some restaurants (e.g., Macaroni Grille) have paper on the table for doodling while you wait for your meal? That’s what I need. I hope to use the tables out front, in the [City] Center lobby, next week for our Cafe Conversation. You will definitely need doodle paper! Can anyone help me? The University doesn’t have that kind of paper, and I can’t even find a place in [university town] to buy it!

**Commentary:** In this post, Dr. Sullivan made a request of the Community of Inquiry. She asks for a resource for an upcoming activity in the face-to-face environment. She made a connection between the virtual and face-to-face learning environments, a connection Caulfield (2011) suggests as critical to successful learning in hybrid environments. She also called on participants in the community to take action, and Dr. Sullivan indicated that within an hour, a student had responded positively to the request. Dr. Sullivan aroused students’ curiosity about the upcoming face-to-face meeting. She mentioned the strategy that would be used, Café Conversation, which has a social presence connotation.

The Virtual Coffee Shop provides a virtual space for teachers and students to interact – to know and be known. This set of posts provides an example of how one instructor used this type of discussion forum to promote community among students.

*Descriptive feedback to strengthen cognitive and teaching presence.* For Dr. Sullivan, an additional challenge in this course was to cultivate her teaching presence and to promote cognitive presence with content that was viewed as highly technical and politicized to this community of educators. In some ways, the group’s cognitive presence and their interest and engagement around issues of educational law and policy were bolstered by the politically charged context of pending educational policy which most of the students saw as threatening to their profession. In subsequent feedback about the course, all students rated the content as highly relevant and highly challenging.

Assignments in the course asked students to write legal memoranda and policy briefs and to read historical perspectives on educational policy. Though these were new experiences for every student, these experiences were cautiously em-
braced because they provided authentic means for participants to examine, critique, and sometimes resolve relevant, timely problems they were facing in their schools, districts, and state. In addition, at the close of the summer, all of these students were taking an examination required for their advanced licensure. A major component of the exam was educational law and policy. Because of the context of the course, Dr. Sullivan was able to leverage students’ immediate needs for knowledge and understanding to stimulate and cultivate cognitive presence.

Because students were reading new information and writing in new genres, Dr. Sullivan created open discussion forums for students to share drafts of their work. These forums were optional, but Dr. Sullivan told students that she would read the work of those who volunteered early and then she would post feedback (using the track changes feature) back into the forum. Volunteers had to finish drafts early, and they had to be willing to let others view their work before and after Dr. Sullivan provided feedback. Dr. Sullivan was able to provide feedback on particular pieces of writing that pushed the entire community forward in their understanding. She provided comments about features of the rubric, drawing students’ attention back to the assignment criteria. In the case of the policy brief, for example, Dr. Sullivan provided feedback on the strength and clarity of the argument, the authenticity of the issue, the appeal to the intended audience, the synthesis of research, the language and writing fundamentals, the presentation of data, and the visual cues and formatting. In volunteers’ drafts, she could offer language and precise words to help writers express their ideas. An analysis of course logs reveals that nearly all the other students looked at the initial feedback provided to volunteers. In this way, Dr. Sullivan was able to increase cognitive presence, correcting misconceptions early and guiding students toward deeper understandings. All students could benefit from the feedback and could “construct and confirm meaning” through early and sustained discourse (Garrison, Anderson, & Archer, 2001). Dr. Sullivan’s feedback to volunteers was positive and descriptive. Examples of her comments and questions, usually highlighted with specific text from students’ papers are included in column 1 of Table 1. Column 2 provides an explanation of how the comment or question contributed to the cognitive presence of the Community of Inquiry within the course.

Huss and Eastep (2013) found that, more than cutting-edge technology strategies, students favored descriptive feedback and other simple strategies for increasing social presence and satisfaction. Dr. Sullivan’s practice of facilitating the sharing of drafts and feedback within a Community of Inquiry promotes cognitive and teaching presence; however, without a sense of a safe social environment, students would likely be less willing to share early drafts and consent to public feedback. Students in this cohort knew each other and therefore, this task likely seemed an extension of the social presence they already shared. In fact, the open sharing may have made the group feel more cohesive. In a sense, everyone was getting the same feedback. There was less asking the instructor for private feedback on early drafts. In addition to sharing drafts, students often asked questions and communicated frustration about writing in what seemed like a foreign language of law and policy. The presence of the teacher was critically important to help students understand assignment expectations, to facilitate the development of new knowledge and sustained discourse, and to provide direct instruction when it was most needed.

CULTIVATING THE CULTIVATORS

The cases of these three instructors provide examples of the tools and methods for cultivating community in online environments. Certainly, the community goal can be reached using other tools and methods. “Presence” is, in some ways, a
Cultivating Community in Online and Blended Learning Environments

Table 1. Relationship between instructor feedback and cognitive and teaching presence

<table>
<thead>
<tr>
<th>Instructor Comment or Question</th>
<th>How this Comment Cultivates Cognitive and Teaching Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good to state your position early, clearly, and directly.</td>
<td>Instructor emphasized the importance of a clear position statement in the policy brief, making the expectation clear for all students. Rubric criterion: Strength and Clarity of Argument</td>
</tr>
<tr>
<td>Can we really link “catch up sleep” to traffic accidents?</td>
<td>Instructor encouraged student to think about the language of the policy brief and choosing appropriate words to represent concepts. In this case, she used direct instruction to correct a misconception. Rubric criterion: Language and Writing Fundamentals</td>
</tr>
<tr>
<td>Is there data to support this assertion?</td>
<td>Dr. Sullivan asked a question to remind writer that data and research are needed to support assertions. Rubric criteria: Synthesis of Research, Data Presentation</td>
</tr>
<tr>
<td>Are educators your audience? It seems other stakeholders are also interested – and perhaps more so – in this dynamic. Are you trying to give educators information to advocate to state and local school boards and state government officials mentioned later in the paragraph, or are you writing to those officials?</td>
<td>Instructor reminded student that the policy brief needs to meet an authentic need of the audience and to give attention to the needs and perspective of the audience. In this way, all students’ attention is drawn to the importance of the audience with the policy brief. Rubric criterion: Authenticity/Audience</td>
</tr>
<tr>
<td>How was “low performing school” defined? You might want to mention that the composite score was used to categorize schools. It is interesting and terrifying that we are now headed toward using a similar model to categorize teachers!</td>
<td>Instructor reminded student that language must be precise, clear, and specific. Rubric criterion: Strength and Clarity of Argument</td>
</tr>
<tr>
<td>You are right about condensing this. I feel there are missing details, but perhaps you have chosen the more important ones. It is a tall order and complex task to condense this information.</td>
<td>Instructor acknowledged that this task is complex and that it requires judgment on behalf of the writer to determine which details are most important. Rubric criterion: Strength and Clarity of Argument</td>
</tr>
<tr>
<td>Very effective graphic.</td>
<td>Instructor reinforced that the particular graphic was effective as a representation of the data. Rubric criterion: Data Presentation</td>
</tr>
<tr>
<td>I like this statement – strong and decisive.</td>
<td>Student had written, “If we want our educational systems to improve, we have to expose the deficiencies and decide on a course of action.” Instructor reinforced the importance of a clear argument. Rubric criterion: Strength and Clarity of Argument</td>
</tr>
<tr>
<td>See rules for parallel structure</td>
<td>Instructor asked student to take responsibility for language and writing fundamentals but also provided direct instruction about the error. Rubric criterion: Language and Writing Fundamentals</td>
</tr>
<tr>
<td>Quotations must be integrated into your text. They cannot stand alone. They are butttresses for your argument; therefore, you must introduce them, and then include them, and then explain why they are significant. See information about creating a “quotation sandwich,” available at [website specified].</td>
<td>Instructor provided direct instruction about how and why quoted text must be integrated into text. Rubric criteria: Language and Writing Fundamentals and Synthesis of Research</td>
</tr>
</tbody>
</table>

highly personal enterprise. Therefore, instructors should be encouraged to use tools and methods that make sense to them individually. Otherwise, the community that is cultivated may feel inauthentic to both the instructor and students. The three instructors highlighted here have participated in collaborative and individual professional development and exploration. If universities are committed to providing quality learning experiences for online students, they must also be committed to providing quality professional development and support to instructors of online courses.

Certainly, there are challenges to cultivating community in online environments. At times, faculty resist online instruction. They often experience worry that they will have to make...
compromises and cut corners in their teaching and in students’ learning. Sometimes, they lack the technical skills to feel confident in their abilities to facilitate online learning. In addition, instructors, who feel they have successfully built community in traditional face-to-face environments may find it challenging to move into virtual and asynchronous spaces. Large enrollment may also impact online environments and the building of community as it is harder to engage a larger class. In a face-to-face environment, there can be a single focus of attention and engagement – a demonstration or image or even an interactive discussion or lecture. These same trusted activities may not facilitate community effectively in an online environment.

Students can also thwart efforts to cultivate community. Huss and Eastep (2013) found that nearly 85% of students who take online classes take them because face-to-faces courses do not fit their schedules or because online classes are more convenient. Only 7.7% indicated that they “learn best in an online environment” (p. 7). Therefore, students are taking a course in an environment and with methods that may not be their preference. That online learning is not the preferred learning environment may also suggest that students enrolled in online courses may not be proficient in the technologies they will need to be most successful.

The research related to cultivating community in online environments and the three cases presented here could inform university faculty development initiatives. Often, faculty development is provided in short workshops, where faculty attend face-to-face or web-based sessions to learn about a tool or skill that they can presumably incorporate into their courses. What seem to make more sense are more holistic and integrated approaches that connect tool-based faculty development to course outcomes and design.

One very successful initiative at our university was to design a summer experience for faculty who taught in the same academic program. The program director felt it was important for faculty in the program to discuss their aims for teaching and their desired outcomes for program graduates. She also thought it would be important for students to experience some common elements and expectations across their courses. What was proposed and then implemented was an example of experiential learning (see Kolb, 1984). Over the summer, program faculty took a hybrid course about teaching hybrid courses. Only one of the program faculty had ever taken an online course before. In the course, they read Jay Caulfield’s How to Design and Teach a Hybrid Course (2011). This text provided common themes and ideas for an ongoing discussion that was conducted both online and in face-to-face sessions. Later, faculty members commented that the discussions they had in this course were richer than those they had in previous weekly face-to-face meetings about the “online issue.” In their first online discussion, the program director wrote the following in response to the discussion prompts Learning Technology Services (LTS) consultants provided based on the Caulfield text (Smith, 2013, question prompts are in italics):

In what ways can blended learning courses be considered the “best of both worlds” (i.e., face-to-face and online)? What could make blended learning the “worst of both worlds?”

Although I’ve certainly been skeptical of online courses at times, I think my skepticism was mostly born of fear and, let’s face it, lack of understanding, about the possibilities with online learning. Like the author of the chapter we read, I think I now see blended learning as a transition toward more online teaching and learning. Though I think it is inevitable, I am also excited about the possibilities now that I’ve had more time to investigate them. I am excited about the blend of participants that might be possible with more online components and less travel. I have also read that the learning outcomes, particularly the writing and critical thinking are often more advanced in online environments. This has been
one of the most fascinating things I’ve read. The
idea (both empirically-studied and student self-
reported) is that in an online environment, when
the instructor makes all communication public,
the students have a greater sense of audience and
responsibility. In addition, students say they have
more models of good writing. I am really interested
in these ideas and think they represent the best of
both worlds. I also like the idea of spending less
time on the road myself! The worst of both worlds
might happen if my colleagues, our students, and
I don’t feel particularly comfortable in either
environment because we are trying to negotiate
something new. I think it will be an adjustment for
us to figure out which “special” activities need to
happen F2F and which can best be taught online
and done independently. Also, I wonder if, for a
while, teaching in both environments requires such
different skills that we will feel that we have split
personalities? I am very optimistic about blended
learning at this point, but I am looking forward
to hearing what others think. What am I miss-
ing - besides that fact that blended isn’t going to
yield filled cohorts? (Forum post, May 28, 2012)

In response to this initial post, another faculty
member wrote the following, which demonstrates
that all faculty were not thinking about this effort
in the same way or with the same perspective:

I’m glad you are excited...maybe some of your
positivity will rub off on me! I am not sure about
the idea that having a public audience really
increases the quality of thought or writing as
much as we would like...maybe it did more a few
years ago. Now that kids text all of the time, and
even post constantly on Facebook, etc., I think
that they are not as concerned with quality as
timeliness. From the forum posts I have had in
my classes, the quality, thought, and effort still
varies widely, just as it does in class. I do think
reading posts, though, gives me perhaps more
insight into all students’ conceptualization than
in a face to face class. It is kind of cool because I
am teaching two sections of the same class right
now; one face to face and one online. I am tracking
what seems to be the strength of each. The split
personality comment you made is so interesting
to me. I taught an all online course to a cohort.
I swear they did not get know to me at all...nor
I them really. I wonder how this affects course
evaluations? When you wrote, “they needed to
be doing” something that they could not do from
a distance,” it made me think of how important
that is too. I now think there is so much more I can
do with students face to face that I can’t from a
distance. Maybe that will change as I learn more.
I’m glad you are kicking this whole thing off for
us. Partly for selfish reasons (do I really want to
do this?), but mostly because I think you will be
able to give us some really good insight and ideas.
(Forum post, May 29, 2012)

These excerpts from the online discussion fo-
rum are representative of the faculty conversations
during this initiative. The online forum provided
an opportunity to discuss teaching approaches
and apprehensions in a faculty learning commu-
nity. As faculty discussed the ideas in the text as
well as their own concerns, they likely deepened
their understandings of their own teaching ideals
because they were “forced” to articulate them
for an audience of colleagues, all investing in a
common effort. In addition, this set of excerpts
demonstrates how faculty began to identify simi-
larities and differences in their teaching approaches
and specific concerns. Faculty members noted
that in their regular F2F program meetings, they
had rarely had these types of discussions about
the intricacies of their individual teaching. Each
faculty member had individual challenges to face
in this effort, but they also had support from each
other and the LTS consultants to navigate those
challenges.

During the course, each program faculty mem-
ber designed a course that was to be taught in the
program. Together, they discussed the courses,
assignments, evaluation methods, and activities.
As a result, the program had a continuity that it might not have had if each faculty member worked independently. Another important aspect of this experience was that each faculty member also had one of the two LTS project consultants as a “coach” while they worked on their courses. They could ask questions about the tools and course activities that were specific to a particular class. In the end, each faculty member had as a “final assignment” the development of a course guide and course built within the LMS. Also, the relationships formed between program faculty and the LTS unit have been lasting and fruitful. Frequently, these program faculty co-deliver face-to-face or web-based professional development sessions based on their course development or course delivery experiences. What has been powerful and evident about this faculty development initiative is that these faculty members and the LTS consultants developed and have maintained a Community of Inquiry characterized by the same core elements that cultivate community in online environments: social presence, teaching presence, and cognitive presence.

In addition to this sustained faculty learning community within a hybrid course, we have begun to develop other experiential models of faculty development. Though we continue to have face-to-face workshops and consultations with small groups and individual faculty members, we have also developed online webinar professional development sessions. These sessions have engaged a community under-represented in the face-to-face campus offerings. Instructors who have been unable to attend time-bound, place-bound workshops offered on campus have found that the webinars offered opportunities to connect from afar to receive real-time professional development. Regular participants have included adjunct instructors who live at a distance and faculty who were traveling abroad or had situations that kept them from campus. Another advantage to webinar professional development is that the sessions can be recorded and offered to participants who were unable to attend the live session, but felt they would benefit from the recordings.

In the webinar workshop evaluations, participants noted two main benefits. First, many faculty members appreciated the opportunity to participate in a webinar and use the related tools. They were able to experience a webinar as students might experience it before trying to facilitate one in their own online courses. One participant’s comments indicated how carefully he paid attention to the facilitator’s skills: The moderator’s “ease of delivery eased some of my anxieties about teaching in BB Collaborate. Great role modeling. He set a good pace for participants and provided frequent opportunities for us to ask questions and try some of the features ourselves. Thank you for a great learning opportunity.”

A second benefit of webinar faculty development noted by participants was that it provided more flexibility than a face-to-face workshop. One participant wrote, “Please keep offering more Webinars!! It is way more convenient than attending in-person sessions!” Some feedback from the webinar workshop indicated that participants had some difficulty with technical aspects of the webinar (e.g., issues with the browser, Java, internet connectivity); however, participants also saw these sessions as a valuable time to engage in using the tools and troubleshooting potential issues before leading a webinar session on their own. Some of the most successful and well-attended webinar sessions were webinars dedicated to topics not directly related to a tool in the LMS. A series of “Webinar Wednesday” sessions were offered during the semester, hosted by the Learning Technology Services unit but featuring teaching faculty facilitating webinars on developing blogging activities, building community, creating instructor videos, and discussing implications of online place and space. Here, participants experi-
ence a webinar in the context of a broader topic related to teaching and learning. Several of the session participants attended multiple webinars and voiced their appreciation for an experiential learning opportunity in a web-conference related to their own practice and courses.

Another example of flexible professional development that we have begun to offer is a fully online, self-paced workshop in the LMS. The courses are available for several weeks at a time, allowing participants to interact with the tools, resources, and activities they choose. In this case, participants completed a course designed to explore the new features in the Moodle LMS after the university upgraded to the newer version. They were able to participate in discussion forums, use other communication tools, upload files, complete writing activities, watch video tutorials, and self-check their progress in quizzes. Evaluation feedback suggests participants enjoyed the flexibility provided by a self-paced online course and valued the opportunities to customize their own learning by returning to course topics and electing the topics they chose to explore. To receive credit for completing the workshop, participants needed to complete 75% of the activities. Therefore, they could choose which activities to complete and could leave some for another time. Some instructors were not as interested in receiving workshop credit as they were in maintaining access to the course even after the workshop had officially closed.

The majority of those who completed the online course evaluation indicated the experience was as good as or better than the experience they had had in the face-to-face workshops. One comment from the evaluation sums up many of these points: “I enjoyed engaging the material at times that were convenient to my schedule. I also really enjoyed the hands-on format of taking the class this way… (the workshop leader) was a terrific instructor and a quick responder… I look forward to using the skills learned and am now interested in more online courses designed to help me be a better professor.” This professor’s comment highlights his need for flexibility and his value of the facilitator’s teaching presence. An additional benefit of this faculty development format is that participants can stay enrolled in the online course and refer to it later when working on their own courses: “I really liked having it set up as an online (work at my own pace) class. I was able to refer back to the workshop resources as I worked on my own classes.” The facilitator’s teaching presence was important in the design and organization of this faculty development. One participant noted, “I like being able to check in when it was convenient to me, and to retry the quizzes until I got the answers right. Everything was laid out well and easy to follow, too.” Faculty have demonstrated their interest in learning about teaching in the LMS, but now we have been able to use the LMS to reach faculty in new ways that provide the flexibility they need. Many faculty cannot attend face-to-face sessions on their topics of need and interest because they are scheduled at times that conflict with their other responsibilities. The online workshop model provides flexibility and choice for instructors who want to learn more about using the LMS in their teaching.

Cultivating community is important work in higher education teaching and learning. In this chapter, we have offered examples of how instructors have prepared and nurtured online environments for fertile and fruitful interactivity. We have also discussed ways to support growth and community-building capacity among instructors, the chief cultivators. The work continues as we seek new ground and unearth fresh ways to promote social, cognitive, and teaching presence in online courses. The fruit of student engagement, satisfaction, and learning are worth the labor.
Cultivating Community in Online and Blended Learning Environments

REFERENCES


Cultivating Community in Online and Blended Learning Environments


**KEY TERMS AND DEFINITIONS**

**Cognitive Presence:** The extent to which learners are able to construct and confirm meaning through sustained personal reflection and shared discourse.

**Community of Inquiry (CoI) Framework:** A process model of online learning, represents the online educational experience as arising from the interaction of three presences: social presence, cognitive presence, and teaching presence. At the heart of the CoI framework is the idea that
community, critical reflection, and knowledge construction are integral to learning, especially online learning.

**Discourse:** The use of words to exchange thoughts and ideas.

**Discussion Forum:** An activity in the LMS that can be setup to allow communication between participants in the course through posts and comments.

**Learning Community:** A group of people who share common emotions, values or beliefs, are actively engaged in learning together from each other.

**Learning Management System (LMS):** The software application used to deliver course content and provide online activities for students; this term is synonymous with course management system (CMS). Some common LMS platforms in higher education include Moodle, Blackboard, Sakai and Desire2Learn.

**Learning Technology Services (LTS):** The unit at our university, supporting the LMS and providing professional development and assistance in effective use of technology, e-learning and instructional design.

**Social Presence:** The degree to which participants in computer-mediated communication feel affectively connected to each other.

**Teaching Presence:** An instructor’s design, facilitation, and direction of cognitive and social processes for the purpose of helping students realize personally meaningful and educationally worthwhile learning outcomes.

**Web-Conferencing:** An activity inside the LMS that allows a synchronous online meeting environment for course participants. The web-conferencing tool currently used by our institution is Blackboard Collaborate.
Chapter 6
Serving Nontraditional Students: Meeting Needs through an Online Writing Program

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ABSTRACT

The role of technology and educational media in supporting nontraditional adult learners is growing. One key area in which more research and development is needed is the improvement of writing, especially writing that is related to formal education. This chapter presents findings related to the use of online writing modules developed to support English as a Second Language and nontraditional English speaking college students. Participants reported improved content-specific writing skills, transfer of writing skills to other content areas, and increased self-efficacy in writing. Differences continued to be noted by key student characteristics. The study has implications for continued development and use of digitally supported writing tutorials for nontraditional adult learners.

INTRODUCTION

As the availability of educational media resources and their functionality grows, their inclusion in meeting the needs of diverse students from dissimilar backgrounds is increasing. Technology is frequently recommended and used as a way to close the access and accountability gaps between these diverse learners’ needs and their presence and performance. Progress in learning domains related to English Language Arts (ELA) education, including reading, comprehension, and writing are particularly vulnerable for these at-risk populations. Although a great deal of research investigates reading literacy development, instructional strategies, and language learning on sub-populations of diverse students—non-native English speaking students or English Language Learners (ELL) at...
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the K-12 level (e.g., August, Carlo, Dressler, & Snow, 2005; August & Shanahan, 2006; Graham & Perin, 2007)—there is a dearth of research regarding writing development and non-native English speaking students in higher education (Danzak, 2011). Even less research exists on writing development for diverse populations of adult learners, both non-native English and English speakers.

Writing, particularly academic writing, is complex in nature. Writing requires authors to express their thoughts and ideas digitally or on paper to communicate to others. In addition to expressing thoughts and ideas, academic writing requires the use of correct grammar, spelling, and an organizational format that is logical for conveying the message at hand. The ability to produce quality academic writing demands a wide array of skills in: 1) mechanics (e.g., handwriting, spelling, punctuation, and syntax); 2) the processes surrounding writing (e.g., language generation, planning, organizing, and revising); and 3) abstract components (e.g., voice, and audience) (Camhi & Ebsworth, 2008; Graham & Perin, 2007; Olive & Kellogg, 2002).

Many adult students are institutionally-excluded from learning advanced skills and knowledge because of limited writing and reading fluency. One especially vulnerable high-risk group consists of adults for whom English is not their native language. For these students, learning to write in a second language requires them to do double the work. For example, students for whom English is a second language have to focus on not only learning the course content, but also on learning the writing processes and skills required for communication in the English language. These adult learners, who are continuing their education, need to possess proficient reading and writing skills in English if they are to be successful in higher education settings. Crandall and Sheppard (2004) noted that one in four enrollees in community colleges falls in this category, and that the adult English as a Second Language (ESL) population is the largest and fastest-growing segment of adult education. In a national study, Tucker (2006) found that ESL courses are overcrowded, overbooked and generally unavailable to those most in need.

A second underserved adult population of students consists of nontraditional English speaking students who are returning to the higher education classroom; according to the National Center on Educational Statistics (2010), enrollment of students ages 25 and over increased by 42% between the years 2000 to 2010. These learners are frequently mis-served by direct instruction due to financial, family, career or learning style preferences. Kim, Sax, Lee, and Hagedorn (2010) noted that it is important to recognize the needs of these unique U.S. educated students, noting that their reasons for wanting to learn indicate high motivation and commitment, but require accommodations to instruction.

As a result of these needs, digital technology and media resources including webinars, tutorials, online assistance, and blended instruction, are being used to address nontraditional learner instruction. Newman and Murphy (2011) note the importance of these methods in meeting the ELA needs of “special” or “nontraditional” learners and providing preliminary success of media and digitally enriched instruction; the authors indicated, however, that further research on specific approaches and populations should be conducted.

To determine the overall impact of using technology to meet the needs of nontraditional students, learning and variables related to learning must be taken into account. In its broadest sense, learning is defined as acquiring new knowledge, behaviors, skills, values, or preferences and involves synthesizing different types of information (Mayer, 2001). Both learning style and learning self-efficacy serve as confounding variables that result in different approaches or ways of learning. When students also are learning in an unfamiliar setting, the role of these variables places even more demands on learner control; demands that may be magnified again when technology and multimedia are involved (Lee, 2000). Although much is known
about learning styles and self-efficacy in a face-to-face setting, only limited information is known about the roles of these variables within the cyber world and even less is known for nontraditional learners in these settings as we develop online support. There is a need to investigate the role of learning style and learner self-efficacy amongst these nontraditional adult users when using a web-based multimedia enhanced tutorial.

**Purpose of the Chapter**

This chapter presents findings related to the use of an online multimedia supported writing tutorial developed for nontraditional students. The tutorial under study is composed of a series of self-contained modules addressing writing processes, available either through instructor assignment or self-selection. The students in this study represent adult learners enrolled in community colleges or exclusively online institutions. The classes serve students from different disciplines, but all include a focus on improving writing and composition. Learners were nontraditional in one or more of the following categories: age entering higher education, non-native English speaker, or late entry or shift in career status. The content consists of five web-based modules offered to students as a tutorial within face-to-face classrooms at a community college or in online courses. Results represent findings across four pilot sites, two semesters, and three institutions. Variables of interest include domains of perceived relevance/usefulness of the material to current course content and transferability to other courses, as well as self-reported learning, preparedness to write, and knowledge of writing. Selected demographic/cultural variables also were assessed to examine the need for control of confounding or concomitant factors. The relationship of student learning style and self-efficacy on the process of use, affect toward technology-based learning, and self-reported learning patterns and outcomes are presented. Specific questions to be addressed are: 1) What impact do the modules have on affective outcomes (i.e., perceptions of knowledge generation and transfer) for students in a blended learning course; 2) What impact do the modules have on affective outcomes (i.e., perceptions of knowledge generation and transfer) for students as the modules are replicated and transferred across all three sites (and all four classes); and for a specific module related to plagiarism, 3) What is the relationship between user characteristics (i.e., learning styles, computer self-efficacy, and writing self-efficacy) and writing outcomes across all sites; and 4) What impact does participating in the module have on student cognition across all sites.

**BACKGROUND INFORMATION**

A review of evidence-based learning practices indicates that learning style is a major confounding variable of learning processes and outcomes, especially in technology-supported constructivist instruction. Constructivism and student-centered learning, coupled with social cognitive psychology, have identified multiple confounding user variables related to the acquisition of outcomes of technology-supported transfer of knowledge (Cheng, 2006). Newman, Reinhard, and Clure (2007) found that when multimedia tools were used to support STEM learning, students with different learning styles used the resources differently. Similarly, Rodd and Newman (2009) noted a difference in outcomes based on the use of technology in STEM related areas for adult learners that appeared to be confounded by learning style. Computer self-efficacy also has been shown to be an important confounding factor for users in technology-supported settings (Murphy, Coover, & Owen, 1989). Newman and Passa (2007) and Newman and Clure (2007) found that technology self-efficacy were concomitant variables when studying the impact of multimedia and online-supported learning for traditional college students. Similarly, Newman and Murphy (2011) found
that self-efficacy was important when studying outcomes of technology-supported K-12 English Language Arts. Understanding learner characteristics will assist course developers in the creation of online, technology supported materials. In these settings, the optimal goal is to structure the instructional conditions in a manner that will facilitate internal learning and information processing within each learner’s zone of proximal development (Law & Havannberg, 2007; Newman & Gullie, 2009).

Newman’s (1998) multi-stage process for team leaders to use in designing, validating, and documenting technology and multimedia supported learning systems has been shown to be effective in balancing learner needs with instructor goals. Each stage of the model involves acknowledgment of users’ characteristics, their prior levels of knowledge, skills and experiences, and the external, contextual variables that influence the formation of new learning systems (Newman & Passa, 2007). This model was used to investigate the role of the concomitant variables and selected outcomes in this study.

To understand the learner characteristics of nontraditional students, it is important to understand the definition of what it means to be a nontraditional student. A review of literature on students enrolled in community college and higher education settings indicates that the definition of a nontraditional learner includes more than age and that for many, their needs are directly related to a life changing event that focuses on their status as workers, students, and parents (America.gov Archive, 2008; Jinkens, 2009; Kim et al., 2010). These learners, coupled with non-native English speaking students, create a broader, more comprehensive category of “nontraditional” students. These nontraditional students have been found to struggle with academic writing (Angelora & Riazantseva, 1999; Bitchener & Basturkmen, 2006; Melkin, 2012). Fregeau (1999) studied best approaches to working with students who needed to improve the writing they do for college credit and found that these participants fell into three categories: 1) ESL students; 2) students enrolled in non ESL composition courses; and 3) students in courses which required writing but did not teach writing. Upon examination of writing assignments supposedly developed to serve these students, Fregeau found that the primary feedback given did not meet student needs; rather formative instruction was more related to a grade, correction of surface errors, and rewording of text. As a result, many of these potentially English proficient students quit school, dropped courses, or developed negative attitudes toward writing. Arslan and Şahin-Kızıl (2010) found that English Language Learners using writing software (e.g., blogs and website posts) have an increased writing potential which promotes more effective writing instruction. Crandall and Sheppard (2004) also found that many non-native English speakers enrolled in community colleges and other post-secondary programs needed additional English instruction in writing; they noted that the majority of ESL adult offerings emphasizes listening and speaking skills but excludes writing. This omission makes it very difficult for these students to continue in higher education. More specifically, learners from diverse cultural backgrounds may create different meanings from the same learning task or take different paths to the same meaning (Hutchison, 2006) and students who cannot express their understanding of course content in written English may have problems understanding the content and need interventions that will teach or enhance these skills (Weaver & Jackson, 2011).

The use of technology, multimedia, and other digital resources has been suggested as a way of helping to meet the diverse writing needs of these nontraditional students. For instance, Engstrom (2005) reported that when assistive technology was integrated into the development of college curriculum, students increased their writing ability; Newman and Clure (2007) found that ESL students in engineering who had user-controlled multimedia and digital access to course content
reported greater content learning including that expressed in written work and also exhibited improved attitudes on indicators of self-efficacy. Similarly, Mahfouz and Ihmeideh (2009) reported that using online chat rooms improved listening, reading, and writing skills and Fang (2010) found that use of a computer assisted writing program for ESL college students improved their ability to revise written work and increased perceptions of ability. Additionally, Black (2009) found that English Language Learners benefit from online learning environments; through a mediated platform (i.e. chat rooms, social media, etc.) they encompass multiple aspects of daily life (work, school, and home life). Similarly, when looking at English speaking, returning adult students, Rodd and Newman (2009) found different needs, learning patterns, and outcomes in STEM related online writing requirements than are typically evidenced by emerging adult learners; while not as familiar with technology and hesitant to write, these nontraditional learners more readily see the need for written communication in work and social skills and have a high interest in learning relevant procedures.

BACKGROUND OF THE STUDY

The technology supported approach developed and studied for this paper consisted of five standalone online tutorial modules.1 All modules are conveyed on the Moodle™ platform. The five modules included: plagiarism and the processes involved in getting ready to write, developing ideas, revising, and editing. Each standalone module can be viewed in approximately 30-45 minutes, providing users with a succinct and easy to use unit of study. The five modules consisted of the following:

- **Avoiding Plagiarism**: The Plagiarism module includes a variety of multimedia to convey the content to the viewer. The content includes examples of proper and im-

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The modules were developed with the assistance of an advisory panel with expertise in writing, online education, and working with nontraditional students. After their initial development, all modules underwent cycles of extensive external reviews to document fidelity of content and use of appropriate instructional design methods. A modification of the process developed by Newman and presented with validating evidence in Newman and Passa (2007) was used to provide internal and external validation of content and appropriate use of instructional design. External experts reviewed and offered independent assessments of the modules; these reviews were used to guide revisions and refinement of the module. Following is a summary of the process and findings of module development.

Content Review

A total of 13 content reviews were conducted across the five modules; four external experts were involved in the process. These external reviewers worked in higher education settings and had degrees in English with specialties in ESL teaching, online English as a Foreign Language or English as a Second Language learning, online teacher training, and English for Specific Purposes. The content of each module was reviewed at least twice; some portions had additional reviews depending on needs identified by extended comments and/or suggested changes. All issues were addressed via changes incorporated into the final versions of the modules. Final content review indicated that material presented was suitable for the target audience; the presentation of information was paced appropriately in terms of amount, length of segments, and learning level for the intended audience. Vocabulary, examples, and illustrations were deemed appropriate for introductory college level ESL students and returning adults, and use of multimedia, actors, and settings were identified as appropriately diverse to provide user buy-in and support perceptions of relevance. Future developers of modules of supporting materials for these audiences should note that initial feedback on the design process identified a need for clearly stated learner objectives reflecting the purpose of the modules to be written in terminology appropriate to these users, and the need for continuity in presentation of the organizational information, student-centered objectives, and multiple applications as well as the opportunity to practice. The latter opportunity to practice, was of special importance for these nontraditional users. The need to accommodate the modules for users with visual or hearing disabilities, discouragement of use of Wikipedia as an online resource, and the need for model papers and more practice activities for students to use as self-guided formative assessment also were noted. In addition, external content reviewers provided feedback on the instructor manual, the pre- and post-content tests, and potential internal formative assessment questions. At the end of development, reviewers verified the fidelity of the modules’ curriculum, noting that they addressed the needs of returning adult learners and ESL college students, and others who are either learning English or enhancing their skills in writing (e.g., “…the module is a strong self-paced lesson on the meaning and problems associated with [writing].”).

Instructional Design Review

A total of 10 instructional design reviews were conducted across the five modules; two external experts were involved in the process. Each module was reviewed at least twice to ensure reliability of the reviews. Early reviews of the modules identified areas for improvement which were addressed through revisions and refinement of presentation. Professional expertise of the reviewers included general curriculum development, as well as specialties in academic writing, English as a Second Language, and technology-based instruction. Some portions of each module received multiple reviews, and depending on the need for revisions,
extended comments, and/or suggested changes. At completion, reviewers verified that the modules met expected standards for high quality college level instruction using online methodology. Reviewers noted that the modules made appropriate use of evidence-based design structures, user-guided management, and offered differentiated instruction that would support ESL learners, enhance prior concepts, and offered opportunities to rehearse skills and knowledge. Overall, at time of completion, reviewers perceived the modules as meeting current standards for online instructional design, noting high quality in use of multimedia, flexibility of use, and ability to support stand-alone learning.

Usability Studies

A total of fifteen controlled usability studies, conducted in two cycles, were completed for the modules. Twelve of the users who tested the modules were students for whom English was not their primary language enrolled in higher education courses. Additional reviews were conducted with three native English speaking returning adult students. Completion time for participants per module ranged from 40 minutes to 1 hour and 30 minutes. The first round of usability reviews had eight participants. As part of the screening process, students were given a protocol which verified demographic information, computer self-efficacy, and also assessed learning styles. Four of the ESL students reported using a Non-Roman Alphabet in their primary language (two Chinese-speaking, one Japanese-speaking, and one Korean-speaking), while the remaining four used a Roman alphabet in their primary language (two French-speaking, one Turkish-speaking, and one Spanish-speaking). Half of the participants (n=4) self-reported that they were highly proficient in the use of computers while the other half (n=4) self-reported a familiarity with computer usage at the novice level. Evaluators documented users’ interactions with the module and noted particular areas of difficulty in use especially those related to navigation and transitioning. Through think-aloud procedures and post-use interviews, participants noted the effectiveness of the embedded videos and offered suggestions on placement that can be used by the developer of the resource (e.g., that it would be advantageous to display videos at the beginning of the tutorial as opposed to at the middle, to better engage the learner and emphasize the severity of writing issues). Positive aspects frequently identified included the value of short segments of material, and most notably, the use of the videos (e.g., “I liked the videos” and “The videos helped me understand. They made it more clear with a real life example, plus it was a lot less dry then just reading.”). Following their first usability study, the modules were refined by the project director and staff. An evaluation team subsequently re-tested the modules. Participants (n=4) were similar demographically to those who participated in the first usability study: non-native English speakers attending a higher education setting, representing both Roman and non-Roman languages. These participants verified the successful inclusion of revisions and further suggested minor changes that were implemented before the full pilot testing of the modules. Overall, usability participants provided comments that were positive and enthusiastic, indicating fidelity of the modules and their use.

Content Assessments

Each of the five modules contained a 10 question pre- and post-test used for formative and summative module assessment of cognitive gain. At the time of initial pilot implementation only the Plagiarism module included the assessment presented in this study. The presence of this option was viewed by the advisory panel as positive and subsequently necessary and it was requested that all modules include a form of assessment. As a result, short quizzes for each module, consisting of 10 multiple choice items, were developed.
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and validated by external reviewers and added to each of the modules in the tutorial. To ensure the accessibility of these assessments, an abridged usability review was conducted. Results indicated that students (n=4) were able to successfully access and complete both the pre- and post-assessments (e.g., students were able to take the pre-test, successfully move to the module with no evident problems, and then return to the post-test). It was also noted that data from the pre- and post-tests were easily accessible and available for instructor review, thus providing formative assessment for both students and teachers. A second round of external reviews of the items’ content was conducted on these five modules with reviewers confirming the validity of the questions and their suitability for ESL students.

Final Verification

Revisions of the modules and all supporting instructional materials were completed with continued piloting conducted by potential instructors with small groups of users. At the completion of the project, five fully functioning modules to be used either as comprehensive or standalone tutorials were completed and made available via the internet for integration in classrooms or for individual, self-managed learning.

METHODS

The data presented summarize four pilot applications of one or more of the modules at one or all of the three institutions (total n=73 students). All students were deemed nontraditional based on age of entry, status as a non-native English speaker, or current career status. The institutions of higher education included two community colleges and one distance education institution. The course content areas reflected remedial writing, writing composition, science and psychology. In three of the four pilots, participants were enrolled in regularly offered courses; each of these classes had a major writing component as part of the course requirement. In the fourth pilot, students were engaged in self-managed instruction.

Prior to using the web-based tutorial, students were asked to complete an online affective survey; questions assessed learning style, writing efficacy, and technology efficacy. At the conclusion of the tutorial, students were instructed to complete post-surveys assessing perceived relevance and usability of the material, self-reported impact on writing, examples of use and perceived value. Based on the findings of Newman and Clure (2012), learning style and writing efficacy were examined to determine need as a control variable when analyzing the data. A summary of the four pilot sites follows:

- **Pilot Site 1:** (n=22) was a community college, located in northeastern U.S., serving approximately 14,000 students annually. Many students come from the local region, yet significant numbers of minority students are from other states and countries. The populations used for this study included nontraditional returning native English speaking students taking both required and elective courses in psychology and science. The modules were offered online on a voluntary basis as a means of assisting with required writing assignments; students were referred to the module by the instructor, but no instructor feedback was received.

- **Pilot Site 2:** (n=10) was a distance education center using online courses and testing programs to receive course credit; its major clientele is the adult learner. This institution primarily awards degrees at the associate and bachelor’s levels. The pilot students volunteered to participate in a non-credit bearing workshop on writing. All work
was conducted online. Students did receive support from an instructor and online writing tutors.

- **Pilot Site 3:** (n=21) was a community college located on the west coast of the U.S. It serves almost 25,000 students annually. Participants in this study were enrolled in a blended (online and face-to-face) English for Speakers of Other Languages (ESOL) writing course serving non-native English speakers. The course focuses on reading and writing skills that will support students at the advanced level required for college credit. In this blended setting, students receive instruction in a traditional classroom as well as participate in online learning activities. The tutorial was required of all students participating in the class. During Pilot 3, only limited instructor feedback and assistance with the module was provided.

- **Pilot Site 4:** (n=20) utilized the same community college and instructor as in Pilot Site 3. In Pilot 4, however, a writing tutor was available to assist the students in gaining and practicing content. Students also received formative feedback on writing exercises.

**RESULTS**

This section documents the effectiveness of the modules in these four “real time” settings. As noted above, the participants involved in these studies were representative of Level 2 ESL learners enrolled in community college and workforce related educational settings and reflect module usage for both non-credit and for-credit use. Data sources included students’ responses to affective and cognitive content surveys, and interviews with instructors and project staff.

**Study 1: Affective Impact of All Modules at One Site**

A pilot study of full implementation of all five modules was conducted at Site 3. Participants in this pilot (n=21) represented ESL undergraduates; first languages included Spanish and a variety of Asian/Indo-Asian dialects. All students were enrolled in a blended (online and face-to-face) ESL writing course serving non-native English speakers. The course focused on reading and writing skills that support students at the advanced level required for college credit. In this blended setting, students received instruction in a traditional classroom supported by online learning activities. Use of the online modules was required as part of the course; both the instructor and a writing tutor were available to assist students when using the modules. Student participants were assigned module use in a sequential pattern by the instructor, and after each tutorial, were asked to indicate their perceptions of the overall value of the specific module; their preparedness to use that information in course assignments; and potential use of knowledge gained in future writing endeavors. Finally, students were asked to indicate, via examples, how module usage would benefit them and if they would change anything in the module to make it more relevant.

Findings indicated that students reported usage of the tutorials to be beneficial in improving specific areas of ESL course writing, promoting better writing in other courses, and increasing student control over the learning process (see Table 1). The majority of responding students perceived the Plagiarism, Getting Ready to Write, Developing Your Own Ideas, Revising Your Work, and Editing and Polishing modules to be successful in assisting them to recall specific technicalities of the respective module, indicating a high level of immediate retention of content. Students also
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Students not only reported gains in knowledge specific to each module, they also reported transfer of that knowledge to their other courses’ writing assignments. The majority of participants indicated that knowledge and skills supported by the modules increased their ability to be successful in improving their ESL course required writing assignments. All five modules were reported as beneficial in increasing the students’ writing ability in other areas of coursework.

Affective gains that support writing and general education achievement were noted to be influenced by module usage. Student responses indicated that use of the modules motivated them to learn more about writing and to develop better general writing skills. This was especially true of the module Developing Your Ideas. Students self-reported a secondary benefit to module use; they perceived themselves as more in control of their general learning by being able to self-direct their activities.

Students identified value in becoming better writers and saw a valid need for the modules, commenting, “It will help me to use techniques I have not used before” and “I just want to say that I like the details in these tutorials because they are very useful and helpful. I keep all the notes that I got from them in order to use them when I need to write on any topics now and in the future.” Students also related transfer of the work in some modules to other courses and writing techniques, stating, “The modules are beneficial because of using different resources … and expanding on your thoughts.”

Study 2: The Role of User Characteristics

A series of multivariate multiple regression analyses was used to determine the role of learner characteristics and the degree to which they should be considered for this audience when developing online resources by combining available data across all sites (n=95). Because of its ubiquitous

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Table 1. Participant responses to key outcome constructs In all modules percent agreement

<table>
<thead>
<tr>
<th>Construct</th>
<th>Module Response*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plagiarism (n=20)</td>
</tr>
<tr>
<td>Recall Immediate Knowledge</td>
<td></td>
</tr>
<tr>
<td>Gained knowledge of module.</td>
<td>90</td>
</tr>
<tr>
<td>Recall technicalities of module.</td>
<td>100</td>
</tr>
<tr>
<td>Transfer Knowledge</td>
<td></td>
</tr>
<tr>
<td>Increased ability.</td>
<td>95</td>
</tr>
<tr>
<td>Outside this course.</td>
<td>85</td>
</tr>
<tr>
<td>Improve Writing</td>
<td></td>
</tr>
<tr>
<td>Develop better writing skills.</td>
<td>75</td>
</tr>
<tr>
<td>Motivated to learn more about writing.</td>
<td>85</td>
</tr>
<tr>
<td>General Learning</td>
<td></td>
</tr>
<tr>
<td>Self-direction and responsibility.</td>
<td>95</td>
</tr>
</tbody>
</table>

*Percent responding either “strongly agree” or “agree” on a 6 point Likert-type scale.
need, variables related to instruction pertaining to plagiarism are presented here. Globally, the major predictor constructs were learning style (four dimensions: active/reflective, sensing/intuitive, visual/verbal, and sequential/global); computer self-efficacy (three dimensions: general ability, use of specific tools, and use of tools related to writing); and writing self-efficacy (six dimensions: importance in real work; importance in classwork; importance in general learning; work habits; role of help; and transfer to other subjects.)

For all series, the five criterion constructs were: plagiarism knowledge, plagiarism avoidance/usage, plagiarism knowledge impact on writing, transfer of plagiarism content to other settings, and transfer of knowledge of plagiarism to self-improved learning. See Tables 2 and 3 for an overview of the findings.

Analyses for computer/technology self-efficacy indicated that none of the predictor constructs were related to the students’ reported outcomes. Overall, very little predictive ability was found for students’ computer/technology efficacy. Examination of the data indicated that the majority of students consistently perceived themselves as high in the use of general technology tools, moderately well prepared in the use of specific technology tools (other than word processing), but having limited knowledge about tools that could be specific aids to writing.

Learning style, however, was related to students’ perceived outcomes with the greater relationship established for verbal and global learners. Status as a visual/verbal learner was positively related to plagiarism knowledge with verbal learners reporting more gain. The more verbal the learner, the greater the impact reported in increased knowledge of plagiarism, the ability to avoid plagiarism, and assistance in course work. Similarly, status as a visual/verbal learner also was related to the sub-construct of learning about plagiarism; the more verbal the learner, the more recall of plagiarism technicalities reported. Recall of plagiarism technicalities also was related to the students’ status as sequential/global learners; the more global the learners, the more they reported technical aspects of plagiarism.

Students’ learning style also was found to be related to their ability to transfer information learned via the tutorial to other settings, and, as was found with direct knowledge/use of plagiarism. The greatest relationships were found by

**Table 2. Summary of learning style as a predictor of writing outcomes**

<table>
<thead>
<tr>
<th>Predictor*</th>
<th>Plagiarism** Learning</th>
<th>Plagiarism Usage**</th>
<th>Transfer Plagiarism to Other Settings**</th>
<th>Improve My Writing**</th>
<th>Improve My General Learning**</th>
</tr>
</thead>
<tbody>
<tr>
<td>(-)Active/Reflective(+)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>(-)Sensing/Intuitive(+)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>(-)Visual/Verbal(+)</td>
<td>+ recalling plagiarism technicalities</td>
<td>+ increased knowledge + avoiding plagiarism, +helped in course work</td>
<td>+ transfer plagiarism info to other areas</td>
<td>+ develop self-direction and responsibility + work collaboratively</td>
<td></td>
</tr>
<tr>
<td>(-)Sequential/Global(+)</td>
<td>+ recalling plagiarism technicalities</td>
<td>- develop specific writing skills + transfer plagiarism info to other areas</td>
<td>+ more motivated to write and learn writing</td>
<td>+ develop self-direction and responsibility</td>
<td></td>
</tr>
</tbody>
</table>

*-/+ indicates the ends of dimension for learning style; NS=not significant

**-/+ indicates direction of relationship
status as a visual/verbal learner or as a sequential/global learner. Students who were verbal or global learners reported greater ability to transfer the knowledge of plagiarism learned in this course to their other courses. Global learners reported that they were more motivated to learn about writing; however, sequential learners were better able to develop specific writing habits that would avoid plagiarism. The students’ learning style also was related to their perceived growth as a student in general. Verbal learners reported greater growth in their ability to work collaboratively and greater
growth in their ability to self-regulate their learning through self-direction and self-responsibility. In addition, the more global the students' learning patterns were, the greater the perception of self-direction and responsibility; sequential learners reported less self-direction and self-responsibility.

Regression analyses continued to support indicators of content efficacy as an important contextual variable. Data from these students yielded a series of relationships between concepts reflecting writing efficacy and perceived learning outcomes. Students' perceptions about the importance of writing performance (both currently and in the future), their work habits, and their teacher's use of real examples were related to perceptions of the need to learn about plagiarism. Students who recognized that they needed help with writing, attended class on a regular basis, and worked on writing both alone and with others indicated that the information would help them with their coursework.

Teachers' use of real world examples also helped increase perceptions of usage while use of examples from other courses did not. Similarly, students' work habits and teachers' use of examples impacted perceptions of students' immediate learning outcomes. Students who recognized that they needed help and who were not satisfied with their writing ability, who had high attendance, and who worked alone and with others on their writing tasks had greater confidence in their ability with and mastery of plagiarism. These “type A” (e.g., high achieving, high stress) students also had positive perceptions of the teachers' use of “real world” examples but did not have positive perceptions of “other class” examples.

Students' ability to transfer their knowledge about plagiarism and knowledge of writing also were related to several indicators of writing efficacy. Attendance in class, comfort level with writing, perceived importance, and willingness to seek help resulted in positive development of writing skills that avoided plagiarism and the transfer of knowledge about plagiarism to other areas. Working on learning the content by themselves, being uncomfortable asking for help, limited input from the teacher, and low affect toward writing (not enjoying the process and not seeing it related to future jobs) were negatively related to transfer of knowledge, skills and practice. Attendance rate was the greatest predictor of general perception of the writing process and use of skills in other areas of writing. Students with higher attendance rates reported greater gains in general writing skills as well as in plagiarism. Impact on general learning habits was noted to a lesser degree. Students who already possessed positive work habits perceived those skills as increasing, especially in the areas of collaboration; however, teachers' use of examples related to other content domains was perceived as a negative indicator.

When queried at the completion of the tutorial, students confirmed a generally positive perception of the online tutorial but some also noted negative feelings and/or barriers (e.g., “it helped me to understand not to use other people’s words as your own, to make sure you site [sic] the words of others” and “not much benefit pur fur [sic] classroom learn rather than online”). Some students noted specific benefits related to lower level learning (e.g., “helped me improve my language and learn more vocabulary”) while others noted increases in general writing ability and writing affect (e.g., “to think more and express my own ideas better and clearly” and “comfortable with [what] I’m doing”). Others explicitly noted transfer to other settings (e.g., “plagiarism can hurt our lives” and “knowing more about plagiarism and its conscusences [sic] make my life easier”). When queried further as to what might be changed, students requested more internal formative assessment that would help them self-evaluate their progress throughout the tutorial, changes in vocabulary level (to a lower level compatible with their limited English skills), and more specific examples. A few students clearly stated that they
did not want to use an online tutorial; they wanted direct access to an instructor with “just-in-time” assistance.

**Study 3: The Importance of Use on Knowledge Generation: A Comparison of Populations on Plagiarism Outcomes**

A key goal of the project was to document transferability and replicability of the modules as useful and relevant at different sites. The findings presented in this section summarize the four pilot applications of the Plagiarism module at three institutions (n=95 students) using four different modalities of instruction. All students were deemed nontraditional based on age of entry, status as a non-native English speaker, or current career status. The course content areas reflected remedial writing, writing composition, science and psychology. As noted earlier, in three of the four pilots, participants were enrolled in regularly offered courses; each of these classes had a major writing component as part of the course requirement. Prior to using the web-based tutorial, students were asked to complete an online affective survey. Questions on the survey assessed learning style, writing efficacy, and technology efficacy. At the conclusion of the module, students were instructed to complete post-surveys assessing perceived relevance and usability of the Plagiarism module, self-reported impact on writing, examples of use, and perceived value.

**Overall Outcomes**

Analysis of the data indicated a positive impact on several of the domains assessed. The majority of students (78% and 92%) in Pilots 1 (nontraditional adult learners) and 3 (ESL course required use, no feedback) respectively reported that the process of learning supported by the tutorial and its content was interesting, relevant to the immediate course, and also relevant to continued academic expectations. More specifically, when queried about how the tutorial would assist them beyond its present usage, users noted that the module helped them with specific academic tasks and would also be helpful in their future career. Users’ self-reported learning supported these comments. Approximately 40% of the respondents strongly agreed that they had increased recall and recognition skills (knowledge about writing, 40% and knowledge of how to be a better writer, 43%); however, more than 80% of all respondents across all sites reported they had made some gain in knowledge. Students were less confident in their ability to apply the material; only 26% were very confident that they could write better and that they could recall or transfer the knowledge in another area (over 70% indicated some increase in confidence). Student responses did indicate that the tutorial had some long-term learning impact; over one-fourth of the respondents indicated that working on the tutorial helped them develop a sense of responsibility and improved their ability to be independent learners. Again, over 75% indicated some growth in this domain. Several students noted that, after studying the plagiarism unit, they would like more coursework or tutorials related to ethics in academic settings and more about ethics within their chosen careers. For a limited number of students where the instructor reviewed pre- and post-writing samples, it was reported that students decreased plagiarism.

**Specific Learning Variables**

Examination of specific outcome variables, as shown in Table 4 and Figure 1, indicate that students in Site 2 reported the most positive results in direct learner outcomes. These students, however, represented a unique ESL audience in that they volunteered and have no direct course credit tied to their workshop participation; they represent a highly motivated population. Students at Site 1, nontraditional English speaking adult learners who volunteered, had lower responses on motivation.
and knowledge gained. These students were engaged in a course that required written papers and were receiving no assistance from the instructor. They represent the more traditional “volunteer” population (i.e., in a course, needing help, with offered resources, and are motivated to volunteer because of grades). Students in Site 3 and 4 (ESL students, same institution and instructor) reported moderate to high responses on knowledge gained and transferability. These students are enrolled in a for-credit remediation course; the work is required if they are to complete the course, and course completion is required for continual enrollment. In Site 3, the students received only limited feedback; in Site 4, a writing tutor is assisted and monitored their work. Site 4 students have higher reported outcomes than Site 3 students in immediate knowledge gains and transfer gains. Transfer outside the course is equivalent, but perceptions of being a better writer are lower.

Examination of Figure 1 graphically portrays these outcome subscales and reveals the support of the tutorial for expected student outcomes. Recall and Recognition learning is high in all areas, followed by transfer of learning. Overall Improved Writing varies by volunteer status, indicating that outcome may need additional support beyond what is required by a particular class or degree. Perception of General Learning, especially self-direction and responsibility are high in all areas and are indicative of adult learner motivation.

Learner Characteristics

As indicated, user characteristics identified by Newman and Clure (2012) continued to be important moderating variables for these participants. Adults who had greater writing efficacy and more autonomous learning styles reported greater improvements and a more lasting impact on their

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**Table 4. Participant responses to key outcome constructs***

<table>
<thead>
<tr>
<th>Construct</th>
<th>Site 1</th>
<th>Site 2</th>
<th>Site 3</th>
<th>Site 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant Status:</td>
<td>Volunteer</td>
<td>Volunteer</td>
<td>Required</td>
<td>Required</td>
</tr>
<tr>
<td>ESL Status:</td>
<td>English</td>
<td>ESL</td>
<td>ESL</td>
<td>ESL</td>
</tr>
<tr>
<td>Class Content:</td>
<td>Psych/Science</td>
<td>Tutorial</td>
<td>Writing</td>
<td>Writing</td>
</tr>
<tr>
<td>Instructional Mode:</td>
<td>Blended</td>
<td>Online/Feedback</td>
<td>Blended</td>
<td>Blended/Feedback</td>
</tr>
<tr>
<td>Construct:</td>
<td>n=22</td>
<td>n=10</td>
<td>n=21</td>
<td>n=20</td>
</tr>
<tr>
<td>Recall Immediate Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recall technicalities of plagiarism</td>
<td>86</td>
<td>90</td>
<td>81</td>
<td>100</td>
</tr>
<tr>
<td>Gained knowledge of plagiarism</td>
<td>71</td>
<td>90</td>
<td>86</td>
<td>90</td>
</tr>
<tr>
<td>Transfer Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoid plagiarism</td>
<td>90</td>
<td>90</td>
<td>81</td>
<td>100</td>
</tr>
<tr>
<td>In this course</td>
<td>71</td>
<td>90</td>
<td>91</td>
<td>95</td>
</tr>
<tr>
<td>Outside this course</td>
<td>70</td>
<td>100</td>
<td>86</td>
<td>85</td>
</tr>
<tr>
<td>Improve Writing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Better at writing</td>
<td>70</td>
<td>100</td>
<td>81</td>
<td>75</td>
</tr>
<tr>
<td>Motivated to learn more about writing</td>
<td>45</td>
<td>100</td>
<td>81</td>
<td>85</td>
</tr>
<tr>
<td>General Learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-direction and responsibility</td>
<td>75</td>
<td>100</td>
<td>81</td>
<td>95</td>
</tr>
</tbody>
</table>

*Numbers represent percentages of students reporting self-attainment in each outcome area.
Students who had the least training in the English language had the greatest difficulty working through the tutorial but indicated the greatest impact on current and future academic success.

**Student Needs**

When queried about areas where the tutorial could or should be modified to make it “better,” students indicated a need for more practice and more formative assessment. They also noted a need for more help with “vocabulary”; users did not want the vocabulary decreased, but wanted more vocabulary set within context and immediate links to a glossary/dictionary. Overall, the users found the tutorial and modules valuable (83% rated a “6” or higher on a 10-point scale and 50% rated a “9” or higher) with over two-thirds believing that they were now prepared to write papers for other classes.

**Study 4: Impact on Knowledge/Cognition**

At the conclusion of the pilots, data were available from two sites to determine if the modules positively affected the cognition of ESL students when assessed via external resources. To document this outcome, baseline knowledge and post-course knowledge were assessed using pre- and post-course content assessments. Information on the Plagiarism module were available for analysis from two of the pilot sites. A 10-item multiple choice content test was designed and validated; students at Sites 2 and 4 were asked to complete the assessment prior to accessing the Plagiarism module and again at completion. A comparison of the pre-post data at each site was then conducted to verify student knowledge gains.

Data indicated that use of the online Plagiarism module resulted in significant learning gains in...
content knowledge and cognition. A comparison of the Plagiarism module pre-content mean and post-content mean yielded an 8.9% increase after usage of the Plagiarism module. Site 2 students, ESL students who voluntarily participated in tutorial use without a course requirement or instructor feedback, evidenced a 10% gain in scores from pre to post. Students in Site 4, who were required to use the module and who did receive some assistance from the instructor, averaged a gain of almost 6% in reported knowledge. Further indications of knowledge acquisition were observed in student qualitative feedback from tutorial post-assessments (e.g., “[Use] will help improve my writing in the future and also has taught me how to cite, how to paraphrase, how to plan for my writing, how to review, and how to edit and polish my final work.”).

CONCLUSION AND IMPLICATIONS

The findings for this series of studies supports continued investigation of the efficiency and effectiveness of multimedia supported online writing tutorials for nontraditional students in higher education settings. The successful development procedure validates the cyclical process proposed by Newman and Passa (2007) and evidence the need for multiple external reviews by content and design specialists as well as potential user audiences. For this particular audience, comprised of nontraditional college students, it was noted that clear objectives, direct ties to life experience, and multiple opportunities as part of the design were necessary to yield easy and effective use. Results indicate that users, reflecting different languages, career aspirations, and learning needs, improved their writing ability, and to a lesser degree, their attitudes toward writing. For these students, with known language and writing issues, the changes in affect related to interest in and motivation toward writing was important. Users gained in self-confidence, perceived ability, and motivation to take more courses in writing. In addition, students evidenced increased writing skills related to specific content and reported being able to transfer these writing skills to other areas. Subsequent gains also were noted on instructor designed cognitive tests. Areas in need of further investigation include the role of technology-supported formative assessment including the frequency of feedback and the source of input. Data from this study indicate that when and how feedback is provided may make a difference.

Though limited, these pilot studies repeatedly found evidence that learning style and content efficacy were related to students’ self-perceived learning outcomes. When using an online module that provided tutorial information, English Language Learners’ preferred mode of learning, self-reported need for the content, and their perceptions of ability to learn were related to their perceived benefits of the process. The audio laden module, with frequent options that allowed students to enter, exit and access additional materials, was

Table 5. Plagiarism module comparison of pre-post content scores*

<table>
<thead>
<tr>
<th>Site</th>
<th>Pre-Content Mean In Percent</th>
<th>St. Dev.</th>
<th>Post-Content Mean In Percent</th>
<th>St. Dev.</th>
<th>T value</th>
<th>Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site 2</td>
<td>82.50</td>
<td>12.88</td>
<td>92.50</td>
<td>4.52</td>
<td>2.57**</td>
<td>35%</td>
</tr>
<tr>
<td>Site 4</td>
<td>79.47</td>
<td>13.53</td>
<td>85.26</td>
<td>9.63</td>
<td>1.93***</td>
<td>17%</td>
</tr>
</tbody>
</table>

*Site 2 is a distance education center, Site 4 is a community college blended ESL setting; see Section I for additional information.

**p<.05

***p<.10
Serving Nontraditional Students

perceived by verbal learners as more helpful than it was for visual learners. Global learners also perceived the information as more beneficial than did sequential learners. These findings differ from those of Newman and colleagues (Newman, 1998; Newman & Clure, 2007) in the engineering field; in those studies, ESL students were frequently noted to turn off audio overlays so that they could concentrate on the visual words and graphics. In the current pilot of ESL students, computer efficacy was not found to be an important variable, contrary to previous studies (Newman, Clure, Rodd & Morris, 2010; Newman & Passa, 2007); however, unlike those studies, the users in this pilot evidenced a pattern of computer familiarity that varied within the context. The findings related to writing efficacy support previous work by Newman and Passa (2007) and Newman and Clure (2007). In the current study, students’ affect toward and experience with writing is related to their perceived uses and benefits of the writing tutorial. Newman and colleagues noted a similar finding and documented the need for content expertise to part of initial usability studies. Overall the findings for this study support the continued investigation and documentation of student learner characteristics as part of module development. If designers and developers are aware of the end-user and the potential confounding user characteristics, more versatile and usable curriculum materials can be developed.

Much of the current research on usability reflects samples of learners from traditional K-12 and higher education markets; it is important that we begin to look at the needs of those users “outside the norm,” especially those users who reflect different languages and discipline groups. In this study we found both commonalities and differences related to online use by nontraditional users that merit further investigation. As the number of these students increase, and as we continue to find online support to help their education process, we must continue to identify specific areas of need and best practices in development and use. This is especially important as we address the writing and communication skills of this growing population. The study indicates that the nontraditional higher education student has unique needs different from those of traditional emerging adults. Although these traditional students also need help in writing, the processes, form, and style of the help needed by nontraditional students appears to differ. For both types of students, online writing modules have the potential to improve their skills, interest, and overall college success.

ACKNOWLEDGMENT

The authors would like to acknowledge the contributions Claire Bradin Siskin, project director.

REFERENCES


**ADDITIONAL READING**


Serving Nontraditional Students


**KEY TERMS AND DEFINITIONS**

**Active Learners:** Learners who learn best by engaging in discussions, brainstorming, questioning, arguing, doing something externally with content information (testing it, explaining it, etc.). Active learners would rather “try it out and see how it works”.

**Auditory Learners:** Individuals who learn best when involved in discussion or are listening to instruction. Generally, auditory learners ask questions to receive verbal explanation and engage in explaining information to others.

**English for Speakers of Other Languages (ESOL):** English taught to individuals whose first language is not English who live in English-speaking countries.

**English Language Learner (ELL):** Individuals whose native language is not English and are learning the English language.

**Global Learners:** Learners who immediately begin an activity and jump from task to task. They are typically involved in more synthesis than analysis and look at the overall big picture of the learning task. These students do not look so much at directions provided by instructor, but come up with their own ways to complete the tasks.

**Intuitive Learners:** Learners who look for meaning and conceptual information, they rely on their hunches and insight to carry them through the tasks.

**Learning Style:** The natural patterns an individual takes when obtaining and processing new information.

**Level 2 ESL:** A level of learning English for nonnative English speakers considered “High Beginning” where speakers can generally understand the language, but still have misunderstandings and have difficulty reading and writing in English.

**Nontraditional Student:** Students 25 years of age or older that delayed enrolling in postsecondary education immediately after completing high school.

**Online Learning:** Also called distance learning. Refers to learning via electronic media and communication methods using the Internet.

**Reflective Learners:** Learners who learn best by listening to explanations, watching presentations, figuring out problems on their own. Reflective learners take time to process and think through information before discussing (e.g., writing things down), evaluate their options before attempting work, and may work more by themselves.

**Sensory Learners:** Learners who are more involved with the detail-oriented aspects of the learning tasks. They solve problems using the
methods they know work. Typically sensory learners look for facts when they have questions.

**Sequential Learners:** Learners who go through and complete work in a linear fashion (i.e., step-by-step). They typically look at the “pieces” of the tasks or assignments to try to understand the assignment or main idea.

**Type A Student:** Individuals who are highly competitive and ambitious. They tend to be very impatient and work under high pressure situations by juggling multiple deadlines simultaneously.

**Visual Learners:** Individuals who learn best when looking at pictures, diagrams, timelines, flow charts, demonstrations. These learners read from the visuals to make sense of information.

**Zone of Proximal Development (ZPD):** A developmental level where a learner can achieve, accomplish and learn a new task with guidance.

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**ENDNOTES**

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Chapter 7
Blended for Student Engagement and Retention: The Case of Cinema and Visual Culture and Healthy Lifestyle Studies

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ABSTRACT
Facetiously described as the “third generation” of distance learning, blended learning is now the new kid on the block in the deployment of technology to support teaching and learning. Its versatility as a pedagogical strategy for creating learner-centered instruction lies in the capacity to exploit the potentials of both the traditional face-to-face instruction and online learning modality in order to provide students with multiple pathways of learning. Yet, developing a blended course to take advantage of these duo capabilities is a monumental challenge for faculty. This chapter presents an analysis of approaches and models employed by faculty at Northern Arizona University to develop and deliver two blended courses as part of the institution’s strategy of using technology to enhance undergraduate student engagement and retention. The analysis shows that a multimodal approach that infuses technologies and media and a proactive institutional policy in favor of blended learning, coupled with strategic faculty development, provides the best pathway to developing robust blended courses that are truly learner-centered.

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INTRODUCTION

Blended learning is the new darling of higher education. Blogs, conferences and scholarship on teaching and learning strongly emphasize the (almost) unbelievable benefits blended learning offers. Higher education institutions worldwide are also extolling the virtues of this most recent development of online learning, almost without discretion as to its appropriate pedagogical applications. As is often true with any trend, blended learning in many cases is being implemented ‘willy-nilly’ with very little rhyme or reason.

Often defined as the intentional and complementary merging of online and face-to-face learning into one harmonious whole, blended learning certainly has much to offer. The potential advantages of well-designed blended courses are significant: students demonstrate better performance in blended courses compared to those in either fully online or face-to-face classes (US Department of Education, 2009). In that they combine the strengths of both online and face-to-face courses, blended courses deliver improved outcomes and increased student satisfaction (Zhao, Lei, Yan, Lai, & Tan, 2005; Dziuban, Hartman, & Moskal, 2010). And blended learning synthesizes several increasingly recognized approaches such as learner-centered teaching, active and collaborative learning, and social constructivist learning. As such, blended learning initially appears to have no faults, no flaws or weaknesses.

However, whereas the empirical literature clearly demonstrates the superior learning experience offered by blended courses, the design of blended courses presents a formidable challenge to faculty who may not be experienced with this format. When executed properly, blended delivery leads to optimal learning. But the challenge lies in proper design and execution of blended courses. Faculty are often ill-equipped to succeed in this modality, and there are other contextual factors which determine whether a blended course will function well to maximize the learning potential in that course.

To delineate these determining factors, we examine what the contemporary studies demonstrate about blended learning; then we analyze exemplary cases of blended learning at Northern Arizona University. We then discuss lessons learned from poorly executed blended courses, drawing conclusions regarding the required contextual factors for effectively designed and delivered blended courses. The analysis illustrates the centrality of a proactive institutional policy in favor of blended learning coupled with strategic faculty development in providing the best pathway to developing robust blended courses that are truly learner-centered.

BLENDING LEARNING THROUGH THE SCHOLARLY LENSES

The recent avalanche of scholarly literature on blended learning is indicative of the centrality that this pedagogical model has attained in the discourse on teaching. It also gives a false impression that this teaching approach has been late in coming. A scrutiny of literature, however, suggests that a “Johnny-come-lately” nomenclature for blended learning is off the mark. It ignores the fact that face-to-face instruction in combination with aspects of a non-classroom technology-mediated delivery system has been in use for the last couple of decades. A sense of recent novelty in pedagogical practices is driven largely by new pedagogical emphasis (from teacher-led to student-centered learning paradigm), new technological innovations (the internet, social media and personal computers including mobile computing devices) and new learning theories (brain-based learning and social constructivism). All these have elicited a reconsideration of traditional approaches.
to teaching and learning thereby contributing to a paradigm shift in higher education (Buckley, 2002; DeZure, 2000; Barr & Tagg, 1995).

It is now accepted that the platform that has provided the node for the evolution of these new teaching and learning models is the online environment. This environment challenges the traditional approach to teaching and, thus, invites a reconceptualization of pedagogical practices. This is in contrast to earlier technologies such as instructional television that replicated the traditional face-to-face environment (Dzuiban, Hartman, & Moskal, 2004). It is not surprising, therefore, that online-based teaching is now the fastest growing model of providing higher education globally.

The surge in online-based teaching and learning coincides with scientific evidence indicating increased student satisfaction with this mode of instructional delivery (Sampson, Leonard, Ballenger, & Coleman, 2010; Aman, 2009; Drennan, Kennedy, & Pitarke, 2005; Chickering & Ehrmann, 1996). Of the factors contributing to the success, the following are identified as the most overarching: flexibility in program structure permitting more time for students to complete work, cost effectiveness (Vaughn, 2007; Richardson & Swan, 2003); pacing of students' learning in a scaffolding format thus permitting additional time for reflection on the course content (Mathews, 1999; Berge, 1997).

In the Sampson, Leonard, Ballenger, & Coleman (2010) study, student satisfaction was highest in the area of instruction but lowest in teamwork. These advantages notwithstanding there have been criticisms voiced on the quality, delivery model in online courses and the cultural consequences of reliance on computers for instruction (see for instance, Goldbert & Riemer, 2006; Manochehri & Young, 2006; Bowers, 2000). However, we shall not delve into details about these censures.

The new kid on the block in online-based instruction is blended learning (BL). From corporate to K-12 institutions, from virtual colleges to brick-and-mortar universities, BL has become the new mantra in delivering education via learning technologies. BL, as the name suggests, is the fusion between two teaching paradigms employing two divergent philosophical assumptions. We begin with a definition which allows us to share a common perspective of an important phenomenon. Garrison and Vaughan (2007) define BL as “the thoughtful fusion of face-to-face and online experiences….such that the strengths of each are blended into a unique learning experience…. Blended learning is a fundamental redesign that transforms the structure of, and approach to, teaching and learning” (p. 5). Staker and Horn (2012) of the Clayton Christensen Institute for Disruptive Innovation, on the other hand, define it as “a formal education program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, place, path and/or pace and at least in part a supervised brick-and-mortar location away from home” (p. 3). The two definitions illustrate the remarkable differences in emphasis. While Garrison and Vaughan focus on the strengths that face-to-face and online delivery bring to an instructional environment, Staker and Horn concentrate on the student control (or lack thereof) of the learning environment, with supervision of student learning being an integral part of the process. In all, both definitions acknowledge, if only incidentally, the transformative nature of the new instructional modality.

Two important considerations are germane to BL. First, what proportion of time should be dedicated to online and in-class activities? This is always a challenging question for BL instructors and course designers and there are no hard and fast rules. A classification scheme adopted by Educause, a nonprofit agency dedicated to the intelligent use of technology in instruction, catalogues blended courses based on the amount of time spend on each modality. Accordingly, blended courses have between 30% and 79% of activities online, and a fully online course can include up to 20% of face-to-face activities (Allen, Seaman,
Blended for Student Engagement and Retention

& Garrett, 2010). Second, what models of BL are in existence? Four models relevant to higher education can be discerned (Friesen, 2012; Staker & Horn, 2012). The rotation model involves the combination or embedding of online engagement within a range of face-to-face forms of instruction in a cyclical manner. In the Flex model, multiple students are engaged primarily online but under the supervision of a teacher who is physically present. The Self-blending model entails students choosing different courses to take independently, but they do so in a setting where a supervising teacher and other students are co-present. Finally, in the Enriched-virtual model, online experiences are viewed as enriching only periodically through arrangements of physical co-presence.

Research studies point to student satisfaction and improved learning outcomes in BL courses relative to purely online and face-to-face ones. In a meta-analysis involving 51 studies undertaken by the United States Department of Education, it was established that students enrolled in fully online and blended courses performed better than their face-to-face counterparts with blended learning students performing significantly better (U.S. Department of Education, 2009). Another meta-analysis study by Zhao et al. (2005) identified three types of interactions germane to good course design. These are instructor and students, student and their peers, and student and content. They established that blended courses reported more positive outcomes than wholly asynchronous courses. Dziuban et al. (2010) document the level of satisfaction with blended courses among the three generations of Boomers (57%), Generation X (41%) and Millennials (33%) confirming that older students are more satisfied with this teaching modality than their counterparts.

BL has also the potential to reduce course attrition rates in addition to increasing student learning outcomes in tandem with fully online courses. At the University of Central Florida, in research undertaken between 2001 and 2003, the blended model was comparable or even better than the face-to-face instruction in terms of success rate (students attaining grades A, B, or C). In terms of students withdrawing from classes, blended learning attrition rates were comparable to the face-to-face modality for all ethnic groups (Dziuban et al., 2010).

The combination of online and in-class activities in a course allows students the opportunity to learn in different styles and at different paces. Placing rote knowledge tasks online gives students the freedom to undertake self-directed asynchronous study. Class time can then be dedicated to the elaboration of foundational knowledge acquired online or in textbooks. This combination makes the teaching flexible, approachable, and, most of all, motivating to students (Behnke, 2012). A corollary advantage of this blended learning strategy is the inculcation of lifelong learning skills in students. Since a significant proportion of learning is leased to the students at a relatively early stage, they are likely to develop a desire and the skills to continue learning throughout their lives (Glazer, 2012). They gain skills in acquisition, organization and presentation of information that helps them acquire knowledge about the world. These skills are the linchpin for success in the knowledge-driven economy that we live in today.

Additionally, BL encourages active and collaborative learning by students. Students not only acquire information but also process it to ensure they understand it, can organize it as well as make connections with their existing knowledge. After this, they then have to share it with colleagues either in class or online (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010; Svinicki, 2004). So the combination of both synchronous and asynchronous learning strategies leads students to greater learning than would otherwise have been feasible. It is also significant that the flexibility of the blended option helps students navigate the
multiple demands on their time; blended learning may ameliorate some of the pressure on family, work and commuting time.

Faculty also gain from BL courses. A major relief for faculty is the resuscitation of chronically low-enrollment courses thereby protecting jobs and averting loss of income. Hartwell & Barkley’s (2012) use of blended learning strategy in their redesign saw their music class enrollment increase from the perpetual low of 45 students to 1,200 students annually. Not only did this lead to job protection but it also resulted in hiring of additional faculty. Since blended classes also raise student enthusiasm, engagement levels and overall student satisfaction, they play a critical role in cushioning disinterested students from sabotaging the morale of the class. The differentiated instructional structure and scaffolding of the class permit such students to control aspects of the learning process outside the class. This is a major relief for instructors who need not worry about class management issues from such disinterested students.

Finally, faculty enjoy the benefits of increased flexibility in their available time to pursue scholarly or service activities arising from time saved from decreased attendance in class. Because of releasing a portion of the course for independent study by the student coupled by reduced hours of face-to-face instruction time, faculty have additional time for other professional pursuits. Furthermore, with a course using a team teaching structure, it is conceivable for one faculty member to handle the online portion while the other specializes in the face-to-face segment which also contributes to freeing the instructors for other engagements.

In sum, BL represents the third sector in the continuum of distance learning. It blends the strengths of the traditional face-to-face instruction and online asynchronous learning to develop a new learning strategy, both philosophically and structurally. It represents a paradigm shift in both teaching and learning. In keeping with this transformation of pedagogy using the technology medium Osguthorpe & Graham (2003) propose six attributes cardinal to the creation of successful blended courses: (a) pedagogical richness, (b) access to knowledge, (c) social interaction, (d) personal agency, (e) cost effectiveness and (f) ease of revision. Our case analysis of the various BL courses developed at Northern Arizona University (NAU) document the extent to which these design attributes have been articulated in the development of the classes.

BLENDED LEARNING AT NAU

Northern Arizona University has had an official course designation for hybrid learning for at least 10 years. This form of learning has a very flexible definition, including classes that meet once or twice a semester in person and the rest of the time online, or classes that meet in person once a month and the rest of the time is online. There are as many iterations to hybrid learning as there could possibly be. Indeed, the term hybrid learning has begun to be used interchangeably with blended learning, though it is only recently that the University has begun work on a specific definition for blended learning.

The interest in hybrid or blended learning was very informal until just a couple of years ago. Until then the modality of the blend was entirely in the individual faculty member’s purview. The only caveat was that the face-to-face meetings had to be listed in the course catalog. Faculty could not require face-to-face meeting times that were not listed. This was also true for fully online courses. The recent Great Recession saw funding to the university severely cut by the State. However, there was no commensurate cut in the State’s expectations of the university, especially as it concurrently...
dealt with an increase in student enrollments. NAU has seen enrollments increase by over 6,000 full time equivalent students since 2005.

On campus enrollment was particularly a concern as the university saw an influx of students without fiscal resources to support them. Also, as the leadership looked ahead demographics suggested that increasing enrollments were here to stay. At one point, the strategic plan called for a potential 35,000 FTE by 2020. Clearly there was a need to accommodate this increase, with less state funding than was available in 2008. Technology was seen as one potential solution, and blended learning in particular as a way to begin to more effectively use the physical and human resources available without sacrificing the high quality, high touch, learner-centered education that the university was credited with offering.

Also, new thinking on student success as epitomized by rigorous courses and independent learning skills is in consonance with what the students would like to see in their courses. Table 1 summarizes the findings of some key variables of course rigor that first year students ranked as being low. Academic challenge has been perceived as being low with exam performance expectations and homework assignments being rated particularly low. In terms of active learning strategies, the students ranked discussion of classroom topics outside as the highest but this was only slightly above 50%. It is this student concern and the risk of additional student attrition in subsequent years that has been the catalyst for reframing instruction at the undergraduate level with a blended learning approach being the focal point.

Therefore, in 2011 the university instigated the President’s Technology Initiative, a program specifically supported by the Office of the President that was designed to encourage high enrollment lower division courses to explore a blended approach to course design and delivery. As of writing, there have been four calls for proposals for this program, out of which 10 course redesigns have been funded. The faculty coordinator receives a stipend to fund the redesign, a budget to bring in resources to enable the redesign, and one or two semesters in which to pilot the redesigned version of the course. Full implementation of the redesign means that the course would be delivered in a blended learning format across all of its sections, except those that were being delivered online. Additionally, departments that support these redesigns are awarded up to $30,000 and they keep any cost savings realized from the redesign.

NAU developed two forms of support for faculty who intended to apply for the grant and for those that were successful and were working on their projects. First, a blended learning workshop was developed and required for anyone interested in submitting a proposal. This workshop, led by instructional designers at the university’s e-Learning Center, introduced participants to blended learning designs and modes and also modeled one particular blended learning approach. The focus of the workshop was twofold: developing an integrated and intentional approach to blended learning that was not just an online course with a social hour; and, assisting faculty in completing the application process and in developing a cost savings and program assessment plan. Also,

<table>
<thead>
<tr>
<th>Courses Rigor</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Academic Challenge</td>
<td></td>
</tr>
<tr>
<td>• High Faculty Expectations</td>
<td>52</td>
</tr>
<tr>
<td>• More than 15 hours/week homework</td>
<td>33</td>
</tr>
<tr>
<td>• Exams require best performance</td>
<td>47</td>
</tr>
<tr>
<td>2. Active Learning</td>
<td></td>
</tr>
<tr>
<td>• Class topics discussed outside</td>
<td>58</td>
</tr>
<tr>
<td>• Students work collaboratively inside &amp; outside class</td>
<td>49</td>
</tr>
<tr>
<td>• Student applying classroom learning to real life</td>
<td>50</td>
</tr>
<tr>
<td>• Student opportunities to tutor each other</td>
<td>24</td>
</tr>
<tr>
<td>3. Student-Faculty Interaction</td>
<td></td>
</tr>
<tr>
<td>• Faculty members accessible &amp; supportive</td>
<td>42</td>
</tr>
</tbody>
</table>

Source: (Northern Arizona University (2010)
during the pilot and implementation phases the faculty would have priority access to a team of instructional designers, instructional technologists, creative designers, and assessment experts. The projects highlighted in this chapter were successful applicants for this program. Both have demonstrated the need to build in a pilot phase to any institution-wide blended learning initiative. Also, they clearly called for a peer group of faculty developers and instructional designers to share ideas, challenges, brainstorms, and problems. Consequently, the e-Learning Center and the Faculty Professional Development Program invited participants and other faculty to join a Faculty Learning Community on Blended Learning Course Redesign, the second form of support that was co-facilitated by one of the first course coordinators to avail themselves of the grant, an Instructional Designer, and the director of Faculty Professional Development. This learning community built on the peer aspect of the blended learning workshop with a focus on working through the meaning of and the pedagogy behind blended learning at Northern Arizona University. Concurrently to these initiatives the Office of the Provost appointed a senior faculty member and returning American Council on Education (ACE) Fellow to bring a stronger focus to blended learning at the university. One of Dr. Denise Helm’s first actions was to call together a Blended Learning Leadership Team to begin discussions on what exactly blended learning meant for the campus. The group developed a working definition of blended learning and shared it with the university community for feedback and further refinement. Currently, the definition states:

NAU defines blended learning as an approach that combines the best elements of face-to-face teaching with a variety of technologies, resulting in increased learning effectiveness and improved efficiency. Ideally, a blended course at NAU replaces 50% of the conventional class time with out-of-class activities. However, a course that replaces as little as 25% of the seat time with out-of-class activities can still be considered blended. (see http://www.nau.edu/blendedlearning/).

This group has also opened up the President’s Technology Initiative to include a broader focus on courses that are not strictly lower division and high enrollment. As of writing, 27 faculty coordinators representing all colleges are taking the Blended Learning Workshop with a view to submitting a proposal for funding a blended learning course redesign. Also, the Faculty Learning Community on Blended Learning Redesign is in its second iteration, with 12 faculty participating who are also eligible to apply for the grant.

**Case 1: CINE 101: Introduction to Cinema and Visual Culture**

The Need for a Blended Approach and Pedagogical Orientations

It is not always the case that the world of humanities, cinema studies and critical analysis will find fusion in blended learning. Conventional wisdom dictates that humanities are best experienced through instructor-student interaction in a classroom setting. The cardinal traits of a successful humanities program rest on the ability to provide students with dispositions that enable them to be receptive, critical and constructive. Further, wise rack from yore has consistently held that academic study of movies is best achieved when they are watched and critiqued in a classroom, a deviation reminiscent of today’s popcorn-enhanced movie theater entertainment experience. So, the academic study of movies has remained a consistently predictable affair, translating into a boring routine for the instructor and disengaged students. That enrollment numbers in such classes have remained consistently low is not surprising. It is this reality that propelled Astrid Klocke of
the humanities program at NAU to redesign CINE 101 Introduction to Cinema and Visual Culture from a face-to-face class to a blended one.

Necessity is the mother of invention. It forces reflection on goals, re-examination of strategies and a consideration of the consequences. The truism of this age old wit could not have been enunciated better in blended learning at NAU than in Cinema 101. A triumvirate of student needs, university interests and instructor necessity provided the impetus for course redesign. Looking at the horizon, the potential reward was a stimulating and engaging curriculum for students, a course that supports the university’s freshmen academic programming and a professionally satisfying course for the instructor.

Students’ needs were at the apex of the instructor’s concern. Nothing is more injurious to a class than disengaged and demotivated students; they are disruptive and indifferent to the content being delivered. Their demeanor, most often, is infectious, rendering havoc to the teaching-learning climate of the whole class. In a class like Cinema 101, students, according to Klocke:

….expected to sit disengaged in class and watch a cinema and then discuss it, meaning pseudo psychologize the meaning and characters and then empathize with them. That is it. What they need is a critical analysis of the film. They need the ability to know the techniques that went into filmmaking and the tools of the trade of film analysis which includes things such as mise en scene and cinematography. All these tools of analyzing a film, they do not have but they do not think they need them. (Klocke, personal communication, November 15, 2013)

For a long time, that had been the pedagogical approach the class had taken—movie screening in class followed by discussions. Furthermore, since this class fulfills the NAU liberal studies requirements for the freshmen class, most of those who had signed up assumed it would be an easy and “cool” option comprising of watching movies followed by a few discussion points. When students enroll in a course on cinema with its visual, artistic and entertaining attributes but do not attain and develop skills, knowledge and aptitudes in film analysis, then the class becomes an inevitable ritual of movie screening followed by discussions.

The professor’s intrinsic motivation to redesign the class was driven by the need to eschew any semblance of a “sage on stage” with its inevitable practice of standing before a class to deliver lectures on cinema. Though the lecture method appears to be the most ubiquitous teaching method in higher education on account of its efficiency, its functional limits in creating an engaging student-centered learning experience are well enough documented not to warrant additional considerations here (see for instance Khan, 2012). Nonetheless for the Cinema 101 instructor, lecturing was no longer intellectually engaging:

….standing there and repeating myself semester after semester doing the same very basic telling them what they needed to do seemed very superfluous, seemed tiring and unnecessary because we have people doing it online, they have short videos….I could even tape myself and put it online…why do I have to deliver the lecture? (Klocke, personal communication, November 15, 2013)

The course redesign was also driven by two institutional imperatives. The first was the First Year Learning Initiative (FYLI) program, “a unique, locally-developed and faculty-driven program for building academic success in the early college career” (Northern Arizona University, 2013). FYLI is based on the premise that students need—and want—high standards in the lower level courses in order to be successful at the undergraduate level. Students want such standards clearly articulated in the first session in the course and, in order to be successful, they need, throughout the course, support, guidance, highly engaging pedagogy.
and clear, frequent feedback. Courses selected for FYLI designation, as CINE 101 was, must conform to three important principles during the redesign process: socializing students for excellence, maximizing student engagement, and aligning learning outcomes to learning activities and assessments. To incorporate these elements effectively in CINE 101, a blended approach employing a combination of the best practices in humanity pedagogy and modern technology was the most appropriate pathway. This course redesign was facilitated by a generous grant from the NAU President’s Technology Initiative, a competitive funding program for 100 and 200 level courses with large enrollment taught by multiple instructors.

Efficiency in the use of lecturer room, as the institutional imperative, required that instructors, if need be, structure their courses for optimal use of such resources. With the healthy growth in undergraduate numbers, current classrooms have become inadequate and efficient use of existing ones is imperative. Where permissible, instructors have been encouraged to use modern instructional technologies to deliver content that may not warrant frequent face-to-face sessions. Lower-level factual activities like watching movies and discussing the plot can best be undertaken outside the class.

The pedagogical underpinnings informing Professor Klocke are borrowed heavily from her background in linguistics. Communicative language teaching, a language teaching approach that focuses on interaction as a means and goal of study, meant that students would acquire skills in the use of language to communicate ideas meaningfully. Equally important is task-based language teaching where students undertake an activity arising from the text they have covered. Students are expected to generate a product from the content rather than merely asking questions of the professor. This is a decentered, facilitative approach that puts emphasis on learning rather than teaching. These pedagogical approaches could best be facilitated by technology in order to move the class from teacher-centered lecture-based instruction to a cognitively-rich student-centered environment.

**Course Structure**

Like many blended courses in the humanities (see for instance Gau, 2012) Cinema 101 is divided into learning modules consisting of scaffolding of learning activities both in-class and out-of-class. There are 4 modules that mirror the class text, *The Film Experience: An Introduction (3rd Edition)* by Timothy Corrigan and Patricia While. Each module contains a number of chapters, and consists of: (1) chapter summary that highlights the key points of the pertinent chapter in the course text, (2) chapter quizzes, (3) chapter discussion topics, (4) movies linked to the chapter, and (5) additional readings. The course assessment structure encompasses the following: (1) class attendance, (2) 3 surveys, (3) chapter quizzes which are generated from the test bank provided by the class text publisher, (4) 7 written discussions, (5) group project, (6) midterm exam, and (7) final exam portfolio. These study and assessment activities keep the students engaged throughout the semester.

Rather than two face-to-face class meetings of 75 minutes each week, only one is held. The instructor uses the in-class meetings to provide a forum for critical analysis and discussion of the course text and the movies associated with the particular chapter. The class format calls for students’ application of the concepts identified in the readings to movies that they have watched. They are required to demonstrate, with solid evidence from the assigned movies, that they have internalized the cinematography concepts they encountered in the readings. They are also presented with an opportunity to demonstrate why their perspective on the film matters to them. Some of these in-class activities are undertaken in class groups. In-class activities are geared towards what Krathwohl (2002) refers to as medium level conceptual learning skills—where students
use factual knowledge to make interpretations and inferences through application, analysis and interpretations of information acquired.

Out-of-class activities include chapter and supplemental readings, online discussions, chapter quizzes, and watching movies. The preference is for the students to watch the movies on the weekend after they have undertaken the readings and the chapter quiz. Doing so provides important background materials with which to critique the movie. After watching the movie, students participate in an online discussion using the topic provided by the instructor. Online discussion is also undertaken in class groups. These semester-long class groups consist of about 8 students constituted by the instructor at the beginning of the semester.

Another out-of-class activity is a mini-internship. Here students can opt to volunteer in the fall Flagstaff Mountain Film Festival or they take part in the various film series on campus. They then write a reflective group paper arising from this mini-internship experience. Online activities provide the student with opportunities to learn at two levels as per Krathwohl’s (2002) classification. First is the low level learning skills (literal and factual) where they build essential foundational knowledge through recall, recognition and classification such as watching movies and online discussions. Second is the high level metacognitive knowledge where students begin to evaluate, construct and create as seen in the collaborative group projects and internships.

Course assessment takes place through a variety of activities. Besides class attendance, quizzes, 3 surveys, online written discussions and the group internship project, the course assessment also involves midterm and final exams, an essay paper as well as a comprehensive final exam portfolio. The group internship project forms the basis of the semester-long essay paper in which they are required to not only write a reflective piece but also to undertake a class presentation critically documenting their experience in the internship. The comprehensive final exam portfolio, which each student is required to produce at the close of the semester, includes: a one-page reflective essay, a two-page analysis essay and the final exam. In all, the course assessment is structured as presented in Table 2.

The course taps into a variety of learning styles through visual, audio, interaction and collaboration. The course is recursive in structure with both in-class and out-of-class activities complementing and reinforcing each other as captured in Figure 1. The recursive process employs technology to deliver large scale efficiency, profound engagement opportunities and unlimited learning possibilities.

The Blended Benefits

The rewards arising from blending Cinema 101 are the aspiration of every student, instructor and institution. Pedagogically, students have registered increased satisfaction with the course both in terms of content, organization and delivery. Remarkable evidence of student satisfaction is found in stu-

Table 2. Cinema 101 course assessment structure

<table>
<thead>
<tr>
<th>Assessment Activity</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Attendance</td>
<td>12</td>
</tr>
<tr>
<td>3 Surveys</td>
<td>3</td>
</tr>
<tr>
<td>7 Chapter Reading Quizzes</td>
<td>14</td>
</tr>
<tr>
<td>7 Written Online Discussions</td>
<td>14</td>
</tr>
<tr>
<td>Group Project</td>
<td>10</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>10</td>
</tr>
<tr>
<td>Essay Paper</td>
<td>20</td>
</tr>
<tr>
<td>• 1st draft (5 points)</td>
<td></td>
</tr>
<tr>
<td>• Peer review (5 points)</td>
<td></td>
</tr>
<tr>
<td>• Revised draft (10 points)</td>
<td></td>
</tr>
<tr>
<td>Final Exam Portfolio</td>
<td>17</td>
</tr>
<tr>
<td>• 1-page reflective essay (2 points)</td>
<td></td>
</tr>
<tr>
<td>• 2-page analysis essay (10 points)</td>
<td></td>
</tr>
<tr>
<td>• Final exam (5 points)</td>
<td></td>
</tr>
<tr>
<td>Total Points</td>
<td>100</td>
</tr>
</tbody>
</table>
students’ written evaluation narratives, in which they comment that the course has changed their entire perspective on watching movies. A substantial number indicate that they now watch films with a critical-entertainment mindset as opposed to only entertainment as was the case previously.

At the departmental level, enrollment in the course has quadrupled from 35 students a semester in one section to around 150 students in 4 sections. As a result, the humanities program has had to hire 4 adjuncts to match the increased enrollment. Though this has entailed an additional supervisory role for Prof. Klocke, the satisfaction of being instrumental in developing and growing a cinema studies minor in the humanities program far outweighs the added responsibilities. In addition, since there is now one in-class session per week in contrast to the two sessions each week that took place prior to blending, classroom utilization in the humanities building has improved. There are now more classrooms available for other classes in the College of Arts and Letters despite the resurgence in student numbers in the last two years in CINE 101.

Case 2: HS 200: Healthy Lifestyles

Revitalizing a Course through Blended Delivery

Redesigning HS 200: Healthy Lifestyles for blended delivery has caused the course to “come alive,” according to Professor Ellen Larson. Faced with apathetic students, limitations in available classroom space and faculty salary, and her own desire to encourage active learning among the primarily freshmen students in this class, Larson applied for and received institutional support in the form of two initiatives underway at NAU. Of primary importance was the necessity of restructuring the use of class time:

_I wanted the in class time spent applying knowledge. In order for this to happen, I needed a mechanism for students to learn the basic content knowledge prior to class. Building the content into the course shell, and holding students accountable for learning it (online quizzes, self-assessments, online discussion, etc.) made the difference._ (Larson, personal communication, December 13, 2013)

The factor that created the greatest impact on blended HS 200 was Larson’s focus on student responsibility for their own learning. Holding students accountable through intentionally designed online activities “made the difference” for this course. Like CINE 101, HS 200 was redeveloped using a blended approach according to the parameters of the First-Year Learning Initiative (FYLI) and the President’s Technology Initiative. The result is an engaging, dynamic and successful blended course that showcases the best of what blended learning can be. As described above for CINE 101, FYLI certification requires a course to intentionally support student success through careful monitoring and frequent communication.
with students regarding their progress. The President’s Technology Initiative provides the support to redesign classes for blended delivery to promote efficient use of faculty time and classroom space. Together, these two programs afforded Larson the opportunity to dig in and rebuild HS 200 from the ground up. Having piloted the course for two semesters before delivering it across multiple sections taught by multiple instructors, Larson testifies to the benefits of blending this course:

I am able to use my time well. I don’t think 70 students need me to stand in front of them and go over what’s in the textbook, the basics…. The thing I like best about the blended class is I get to do what I love best. And that’s working with the students, establishing relationships with them, and having a very interactive, experiential type of classroom environment. (Larson, personal communication, November 1, 2013)

Larson claims increased personal job satisfaction as one of the primary benefits of the blended approach. Delivering this content is “so much more rewarding” than it was in a more traditional in-person format. The ability to focus her time and energy on engaging with her students, rather than delivering the same basic knowledge semester after semester, has brought new life to Larson’s teaching methodologies and is the most successful element of the redesign.

**Blended Course Structure and Redesign Process**

HS 200 bears many similarities to CINE 101. Larson delivered the first iteration of blended HS 200 in Fall 2012. In that initial semester, Larson taught two sections of 35 students each. Like CINE 101, prior to redesign HS 200 met twice weekly for 75 minutes per session. So much of in-class meeting time was devoted to content delivery—content that students were to have acquired before coming to class—that little time was left over for active and collaborative learning activities, which were Larson’s preference. Indeed she often felt frustrated at her students’ passive learning experience as she was forced to cover basic knowledge in class. Lecturing to a roomful of disengaged undergraduates was neither a successful strategy for Larson nor for her students.

Redesigning HS 200 has allowed the basic content delivery to be moved online. Students can now benefit much more from interactive and dynamic class meetings. Similarly to CINE 101, HS 200 students now meet once per week in a 75-minute session. The other class content takes place online. Larson meets with one section of the students on Tuesday, the other on Thursday. Students reserve the class meeting time on both days in order to be able to meet as a large group for a guest speaker or exam. This additional flexibility enhances the success of the asynchronous element of the blended format.

In deciding which learning activities were best delivered online vs. in-person, Larson turned to Bloom’s Taxonomy. Basic knowledge acquisition, the lower level of the taxonomy, takes place online. Interpretation and application of the content are reserved for class meetings. Students come to class prepared to engage with the content, with each other, and with the instructor. “There is never more than 15 minutes of passive learning in a class period”, according to Larson. “The rest of the class time must be interactive” (Larson, personal communication, October 25, 2013).

**Fostering Active Learning and Student Responsibility**

As part of the FYLI structure, students who are not motivated to do the online work are identified early in the semester while they have time to change their approach. “[Blended delivery] does not work for every student. But it works for many students…. In class, we build community; we build camaraderie” (Larson personal communication, October 25, 2013). Improved connection to the
learning community has had a direct impact on student engagement and success in this course.

Larson acknowledges that students’ ability to adjust to blended courses vary, but argues that with appropriate instructor support, they can be successful:

Some students quickly grasp the blended concept; some need nudging, some need shepherding all semester. I’m not willing to drag the students through. I’m willing to meet them halfway… to help them and show them and guide them and support them. I’m into [student] accountability. (Larson, personal communication, November 1, 2013)

Some of Larson’s methods of encouraging students to take responsibility for their own learning include using a gatekeeper syllabus quiz, requiring hard-copy assignments at the beginning of each class meeting, and allowing students two attempts to take online reading quizzes. Students must score 100% on the syllabus quiz before they can access the first module of the online content. They may attempt the quiz as many times as they need to, but until they answer every question perfectly, they can not proceed in the class. Similarly, students who come to class without their hard-copy assignment are unable to participate in that day’s learning activities, since class activities have been specifically designed to build on and apply the content from the homework assignment due at the beginning of each class. Both of these strategies keep students accountable for their own learning in the class.

For each online reading quiz, students are permitted up to two attempts. If they are content with their grade on the first attempt, students keep it. If not, students may re-attempt the quiz and will earn the average of both scores. Thus, Larson further encourages students to prepare carefully and take responsibility for their learning experience.

Like in CINE 101, online activities in HS 200 are intentionally designed to support and reinforce in-class activities. Online, students complete a variety of tasks including reading, listening to a mini-lecture, participating in an online discussion, evaluating their own lifestyles using an online self-assessment, and “submitting other materials to help prepare them for engagement as soon as they walk through the door [for the next class meeting]” (Larson, video). The online material is divided into clear tasks with labels such as “Read It,” “See It,” “Hear It,” “Do It,” and “Review It.” Helping students come to class prepared for active learning has been one of the primary benefits of blending HS 200.

After piloting the blended course in Fall 2012, Larson made minor revisions for Spring 2013. Based on two semesters’ experience and student feedback, Larson made further improvements before rolling out HS 200 across seven sections with multiple instructors in Fall 2013. The opportunity to revamp the course several times before “turning it loose” on multiple instructors was “such a gift,” according to Larson (personal communication, November 1, 2013). That opportunity resulted directly from NAU’s complementary FYLI and President’s Technology initiatives.

Teaching in the Blended Format is “So Much More Rewarding”

Students engage more actively with the content of HS 200, and apply it more effectively, as a result of blending the class. Additionally, there is more consistency between sections now that the content is captured in the online class shell. Establishing “continuity across the sections, many of which are taught by adjuncts who may or may not stay on” is yet another advantage of the course redesign.

But the primary improvement for Larson centers around the more effective use of class time and richer learning experience that results:

The course has changed dramatically as a result of going from a traditional face-to-face approach to a [blended] approach. More in-depth learning occurs, I am able to customize the in-class portion
based on student need/interest, and I am able to get to know each of my students in a small (35-student) venue instead of a 70-student venue. (Larson, personal communication, December 13, 2013)

In Larson’s observation, students are coming to class better prepared because they have been held accountable to complete the online material prior to the next class meeting. And Larson’s student-centered, active learning approach to in-class activities benefits both her and her students. “Using class time to do application and see the changes, [observing the] students process info and ask questions that are relevant, [seeing them] engage with the material in a way not seen previously… is so much more rewarding” (Larson, personal communication, November 1, 2013).

Despite her success, Larson is not convinced that blended delivery is for everyone. She encourages faculty to consider whether a blended design would support and enhance “the student achievement of [your] course outcomes” before deciding whether to proceed. “However, I do feel that depending on the course and the outcomes, it can really make a class come alive” (Larson, personal communication, November 1, 2013).

LESIONS LEARNED

These two cases highlight two very successful and, as of writing, mature implementations of blended learning at NAU, as well as three major lessons learned:

- Blended course redesign needs to be accomplished with the student in mind.
- The institution needs to fully support the redesign and faculty need to buy in to it.
- Blended learning redesign needs to start from scratch.

As previously noted, there have been 10 courses funded by this grant program and all have demonstrated similar levels of success: increased student engagement, increased capacity, and increased faculty satisfaction. Introductory courses in Political Science, Chemistry, and Economics demonstrate that student success is positively impacted as well. A lab science course in Biology that was constrained by physical space has doubled its capacity by going to a 50/50 blended model.

Yet there have also been some misfires in informal approaches to blended learning. A prime example was in the NAU first year seminar, where two courses attempted a 50/50 blend, where the class would only meet one day of the week instead of two. These courses were directed at entering first year students; it became clear that the students were ill-prepared for the blended approach. In other words, a successful blended course redesign needs to be accomplished with the student’s ability to take control of his or her own learning in mind.

This first lesson can be seen in the implementation of CINE 101 and HS 200. In both instances the courses were intentionally designed to integrate the online and face-to-face components in a fully transparent and obvious way for the students to see the connections and the importance of both. The essential point here is that while blended learning design presents faculty with many challenges, it impacts the students as well. This adds a requirement that faculty design their blended courses to scaffold student learning in this new (to the students) way. Both examples, by adopting the NAU FYLI model, did this from the outset, where there was early and frequent assessment of student learning, and thus the ability to intervene with those students for whom the blended model was not quite working from the outset.

A second lesson learned from NAU’s approach to blended learning course redesign is the need for institutional support and faculty buy-in.
Many of the courses in the blended learning grant project had issues that faculty and administrators were already well aware of, from lack of student engagement, to DFW rates that were relatively high, to lack of physical space. Also, in most courses there was a high demand for seats from students but not enough resources to fulfill that demand. Thus, these courses would likely have looked for a way to solve these concerns without the grant program.

Yet the grant program put institutional resources firmly behind the faculty as they worked on solutions to their issues. CINE 101 saw increased engagement; HS 200 saw increased student accountability for their own learning. Both of these benefits played well into the goals of the grant program. These courses and others in the grant program also saw faculty fundamentally redesigning their pedagogy. This third lesson is basically that blended learning course redesign needs to start from scratch. In all instances faculty went back to the basics: what are my student learning outcomes and how am I going to assess that students have met these? Only after these questions were answered would the faculty designers then focus on the learning activities, and decide which were best delivered online or face-to-face. For example, in HS 200 Prof. Larson fell back on Bloom’s Taxonomy to determine where these activities best belonged. Prof. Klocke, in CINE 101, followed a similar model, ensuring her face-to-face classes were focused on more in-depth student learning.

**CONCLUDING REMARKS: THE ROAD TRAVELLED**

The recent surge in blended courses in higher education is a testament that institutions and faculty recognize the benefits that advanced technology brings to bear in traditional face-to-face and online classes. It is also a recognition that the hitherto bifurcation between the teaching modalities is slowly, but inevitably, giving way to a new pedagogical approach that is more robust, elevates student engagement and provides the instructor with tremendous opportunities for innovative teaching. This embrace of blended learning cuts across institutions in America; this analysis has documented the experience at Northern Arizona University (NAU), a doctoral-intensive southwest institution.

The success of blended learning courses at NAU is an outcome of the fusion between a facilitative institutional environment, student needs and a committed faculty. The Blended Learning Policy framework, the President’s Technology Initiative grant and the First Year Learning Initiative are the high-level institutional policy mechanisms that have catalyzed and facilitated faculty technology-oriented course redesign at undergraduate level in classes that previously eschewed technology. Furthermore, the E-Learning Center at the university has been critical in providing the requisite support for the course redesign. That these classes have registered remarkable success also owes a great deal to students’ demand for classes that are more engaging, interactive, and provide independent learning opportunities.

The two blended courses discussed in the chapter, *Cine 101: Introduction to Cinema and Visual Arts* and *HS 200: Healthy Lifestyle*, offer a rich panoply of in-class and out-of-class activities that are superbly integrated by a sophisticated deployment of technology. The mosaic of online discussions, online written assignments, video clips, a broad array of online assessments, face-to-face instruction and presentations along with individual and group projects serve to break the instructor-textbook monotony that characterized the course before redesign. The outcomes have been evident in increased student enrollment, improved satisfaction with the classes as reflected
in student evaluation comments, optimal use of university classroom space, and additional time for instructors to engage in their research activities.

REFERENCES


KEY TERMS AND DEFINITIONS

**Active Learning**: Learning through doing and applying, not passively absorbing content through reading or lectures.

**Blended Learning**: The intentional, complimentary fusion of online and face-to-face teaching and learning into a harmonious whole.

**Institutional Support**: Mechanisms put in place by the college or university to facilitate course redesign (such as blended courses) including expertise and funding.

**Instructional Design**: The systematic theory-based development of instructional delivery methods and approaches.

**Recursive Course Structure**: Cyclic nature of active learning activities in a blended course involving in-class, online and out-of-class collaborative activities complementing and reinforcing each other.

**Retention**: Student success as evidenced through continuing and increased enrollments.

**Scaffolding**: The intentional inclusion of early and frequent feedback opportunities including low-stakes learning activities to promote student responsibility and allow for timely intervention with students who may benefit from more support (tutoring, counseling etc.).

**Student Engagement**: The motivation and active involvement of students in their own learning, non-passive learning.
Chapter 8

Student Outcomes and Retention in Online Academic and Training Programs

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ABSTRACT

The purpose of this chapter is to examine online education in order to understand how to improve student outcomes and retention. On the surface, although it might appear that the term “online education” only applies to academic institutions, in this chapter, the use of this term also applies to online training programs in business and other organizational settings. Additionally, this chapter offers six specific recommendations that faculty, students, administrators, management, and support staff can undertake to assure that students and faculty will have the resources to successfully complete an online academic or training program. These recommendations are to improve students’ abilities to direct their own learning, to facilitate practices that keep students on track, to increase students’ abilities to identify with their groups; to enable student groups to achieve goals, to create opportunities for faculty to share best practices, and to implement a management system that tracks the effectiveness of the other recommendations and monitors retention rates.

BACKGROUND

Online education has received a lot of attention for many years, and even as early as 2001, “there were 986 distance-learning institutions in 107 countries” (Sprague, et al, 2007, p. 157), and by 2013 about 70% of all higher education institutions reported that online education “is critical to their long term strategy” (Allen & Seaman, 2013, p. 4). As a natural outgrowth of web-enhanced courses (Hermans, et al, 2009), or in an effort to increase enrollment, reduce the number of adjunct instructors, and offer flexible course schedules for students and faculty (Borstorff & Lowe, 2007), higher education institutions are now concerned about how to improve online education programs, even considering the possibilities of offering Massive Open Online Courses (Allen & Seaman, 2013). The growing trend cannot be ignored; students have also become very interested in the benefits...
offered by online education, with almost seven million of them currently taking at least one online course, which represents approximately 32% of all students enrolled in institutions of higher education (Allen & Seaman, 2013). The literature on online education tends to be organized around the following topics:

1. Student demographics, student perceptions of online education, quality of online education, and the perceptions related to that quality (Cao & Sakchutchawan, 2011);
2. Course availability, program quality, length, cost, and courses in the curriculum (Rydzewski, et al, 2010); and, Student learning outcomes, student characteristics, and professor pedagogy (Fillion et al, 2007).

When considering the quality of online education, there is a tendency to make comparisons with traditional, face-to-face instruction. However, this tendency is inherently flawed because of “limitations in the research design itself, differences in student demographics, and inconsistent methods of calculating and reporting completion” (Howell, et al, 2004, p. 244). In essence, it is like comparing apples to oranges (Howell, et al, 2004).

The main advantage of online courses is that they are non-linear, so students can return to previously covered material without worrying about interrupting the natural flow of a class (Borstorff & Lowe, 2007). In addition, online courses allow institutions to have “a higher level of consistency” in the training students receive (Borstorff & Lowe, 2007, p.14), and online education eliminates the two most common barriers to students seeking higher education—time and distance (Tanner, et al, 2003; Tanner, et al, 2009; Brown, 2001).

**Retention and Retention Rates**

There is a common perception that retention is more difficult for online vs. traditional programs (Allen & Seaman, 2011), and because, in general, there is a tendency to compare retention rates for traditional vs. online education, it is essential to have a consistent definition of “retention” complemented with actual figures to substantiate any claims about student retention. However, a review of the literature reveals that while it is easy to find definitions of retention, it is quite difficult to find specific confirmations of retention rates.

One definition of student retention is that it is the percentage derived by comparing the number of students who start an academic program vs. the number who actually complete the program. Using this definition, there are claims that retention rates for online education at four-year colleges and universities can be as low as 40-50% and can go as high as 80% (Howell, et at, 2004; Snarski, 2008). In addition, student retention can also be defined as the percentage of online freshmen (first year university students) who complete their freshman year and return for their sophomore (second) year. However, institution-reported retention rates from 133 universities show that this definition of retention rate can yield a range from 12% to 95% (Degree Jungle, 2013). When evaluating retention at two-year colleges, there are indications that a 68% retention rate is applicable (Krueger, 2008) even though identifying true retention rates for two-colleges would be impossible, because of the varying reasons for student enrollment and their own expectations about completing a program (Vieira, 2005).

What is needed is a consistent definition and a broad-based data set which could be used to accurately measure and compare the retention rates of individual programs within institutions and the retention rates experienced by institutions as a whole. Concerning student retention as it applies to the number of undergraduate students who complete a bachelor’s degree, DeAngelo, et al (2011) provide the rare instance of actual retention rates based on actual numbers. Based on their work on the CIRP Freshman Survey (a national survey which captures a wide range of student characteristics), and information gained
Student Outcomes and Retention in Online Academic and Training Programs

Table 1. Degree completion rates of undergraduate students (DeAngelo et al., 2011)

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<thead>
<tr>
<th>Number of Years to Complete a Bachelor's Degree</th>
<th>Percentage of Students Completing the Degree</th>
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<tbody>
<tr>
<td>4</td>
<td>38.9</td>
</tr>
<tr>
<td>5</td>
<td>56.4</td>
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<tr>
<td>6</td>
<td>61.2</td>
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from the National Student Clearinghouse (which includes data from 3,700 post secondary institutions), DeAngelo, et al (2011) identify the following “degree completion rates” for approximately 210,000 full-time students from 356 four-year, non-profit institutions:

Although completion rates are not the same as retention rates, the salient fact is that arguments about degree completion rates can be made because those arguments can be substantiated with objective data, and until such data can be identified for retention rates of online vs. traditional education programs, it will be hard to make a truly quantifiable comparison between the two.

As used in the rest of this chapter, the term student retention means the percentage derived by comparing the number of students who start an online course or academic program vs. the number who actually complete the course or program.

Outcomes of Online Education

Because of the above-described difficulties of comparing the retention rates of online vs. traditional education programs, the only comparisons that can be made are with quantifiable outcomes. Phipps & Merisotis (1999), Russell (1999), and Daymont & Blau (2008) find that the outcomes of online education and traditional face-to-face instruction are about the same, which is consistent with Cao & Sakchutchawan (2011), Lu, et al (2003), Priluck (2004), Haney & Newvine (2006), Watters & Robertson (2009), and Borstorff & Lowe (2007). In addition, 77% of academic leaders report that the learning outcomes of online courses are “the same or superior to … face-to-face courses (Allen & Seaman, 2013, p. 5). When comparing student performance as it relates to the way students apply course concepts, face-to-face instruction tends to yield higher results (Fillion, et al, 2007; O’Connell, 2002); however, student satisfaction, motivation and participation are higher in online classes (Fillion, et al, 2007).

Professional Development and Online Education

Online education is not only limited to academic institutions; online technologies are also used by many businesses and other organizations for training or professional development purposes, mainly because of the reduced cost of instruction, which can often be one-third the cost of traditional employee training programs (Bartholomew, 2005). In addition, there are savings in employee travel expenses and time away from the office, because employees can engage in training activities regardless of where they are. As with traditional online academic courses, learners can advance at their own pace, and organizations are able to have greater consistency in their training programs (Borstorff & Lowe, 2007) and can tie those programs to organizational strategies (Dobbs, 2002). However, online training programs do not come without shortcomings. For example, a study by Michigan State University has found that onsite, traditional face-to-face instruction is better than online training programs, because it provides opportunities for instructors to develop their students’ complex analytical skills (O’Connell, 2002). To that end, coupling an online training program appropriate incentives and a Learning Management System like Topyx or LearnShare to track and record employees’ progress can mitigate such shortcomings (Bartholomew, 2005; Dobbs, 2002; Smith, 2004).

Online training programs can also be used in academic institutions for professional development
purposes, especially for mentoring and curriculum development. One method that has proven successful is the “Computer Assisted Curriculum Analysis, Design and Evaluation for Science Education in Africa Programme” (CASCADE-SEA), which links the professional development of teachers with the process of curriculum development, and guides teams of teachers to create exemplary instructional materials by helping them understand and visualize the process of developing curricula and associated materials (McKenney 2001, 2005).

Similarly, Learning Content Management Systems (LCMSs) can be used for the development, management, maintenance and delivery of learning materials (Zarrabian, 2010) making it possible for faculty to develop course content and repurpose that content for additional uses in addition to having the elements of Course Management Systems like BlackBoard.

Problems Associated with Online Education

Overall, it is the independent nature of online education that is also its major disadvantage, because with a choice of how and when online learners could spend their time, they often do not use their time wisely (Brown, 2001), which may be due to the absence of regular interactions with faculty (Weaver, 2002; Anstine & Skidmore, 2005; Conway, et al, 2005). In addition, the inherent independency required of online learners also has an impact on completion rates; however, this drawback can be mitigated by “building a sense of community through student-to-student and/or student-to-faculty interactions” (Cervantez, 2010, p. 1). In fact, faculty interaction is one of the strongest predictors of student success and retention (Arbaugh & Benbunan-Fich, 2007; Borstorff & Lowe, 2007; Totaro, et al, 2005).

Furthermore, there are concerns about team projects within academic environments. Even in traditional face-to-face classes students are concerned about the lack of instruction they receive about team work, control over the composition of their teams, and the ability of the team to manage goals, processes, assigned tasks, and non-contributing team members (Hubbard, 2003; Brown, et al, 2006). Other concerns include the demands made by task-centered members (Grzedz, et al, 2008), and the need for synchronous and asynchronous online delivery systems that provide real-time and on-demand team interactions (Gapp & Fisher, 2012).

Similar concerns about teamwork are also present in organizations and businesses that have international operations with international teams (Earley & Gibson, 2002; Birchall & Giambona, 2007; Giambona & Birchall, 2008; Petersen & Hillkirk, 1991; Shams & Jackson, 2006). Because many online courses use team projects as part of their instructional methodology, and organizations are conducting their operations on a global scale with teams comprised of people from different countries, virtual teams have the additional impact of cultural diversity on team member relationships and their ability to complete tasks (Kankanhalli, et al, 2007), which leads to a lack of team identification—the extent to which team members view themselves as part of a group (Fiol & O’Connor, 2005). And, it is the lack of team identification that is one of the main causes of conflict and failure in virtual teams (Hubbard, 2013b).

FINDINGS AND RECOMMENDATIONS

Overall, from the literature and reported observations, it appears that in order for students to be successful online learners, they must be self-directed, be able to identify with their groups, and possess the skills that facilitate team goals, processes and tasks. Furthermore, to assure the completion of online courses and programs, faculty have to use methods that enable students to fulfill stated goals, have opportunities to share best practices with peers, and monitor the results of their efforts.
As a result, the following recommendations are offered as a means of improving student outcomes and retention:

- Improve students’ ability to direct their own learning;
- Facilitate practices that keep students on track;
- Increase students’ ability to identify with their groups;
- Enable student groups to achieve goals;
- Create opportunities for faculty to share best practices; and,
- Implement a learning management system that tracks the effectiveness of the other recommendations and monitors retention rates.

The literature describes approaches based on using one or two of the above recommendations; however, a comprehensive approach using all six can more fully manage the factors that lead to successful student outcomes and retention and mitigate the barriers and related problems to the adoption of online learning.

Recommendation #1: Improve Students’ Ability to Direct Their Own Learning

The main message that is consistently delivered throughout the literature is that successful online learners have to be self-directed (Hasler-Waters & Napier, 2003; Allen & Seaman, 2013; Tanner, et al, 2003; Tanner, et al, 2009), especially because self-direction (or self-regulation) improves retention by reducing attrition rates—the percentage of students who do not complete a course or program (Sitzmann, 2010).

According to Guglielmino (1977), a highly self-directed learner is:

... one who exhibits initiative, independence, and persistence in learning; one who accepts responsibility for his or her own learning and views problems as challenges, not obstacles; one who is capable of self-discipline and has a high degree of curiosity; one who has a strong desire to learn or change and is self-confident; one who is able to use basic study skills, organize his or her time and set an appropriate pace for learning, and to develop a plan for completing work; one who enjoys learning and has a tendency to be goal-oriented (p.73).

It is obvious that not all online students are self-directed learners (Tanner, et al, 2009), let alone highly self-directed. And, because it is difficult to understand the impact of a specific learning context on self-direction (Song & Hill, 2007), an intervention is needed to identify the students who are not naturally self-directed, and provide them with the skills and tools to become self-directed, which is especially crucial for the first online course students take.

To improve students’ ability to direct their own learning, faculty could schedule a lecture and class discussion about self-directed learning during the first week of class, which serves as an “orientation” to this skill (Howell, 2004), and is especially effective if it focuses on how to take control of learning, how to manage deadlines and other responsibilities, and how to use resources to meet those deadlines and fulfill responsibilities. Including testimonials from former students (Tanner, et al, 2003), and expectations about course goals, assignments and tasks (Tanner, et al, 2009) establishes self-direction as a major element of the course. In addition, students could complete a Self-Directed Learning Readiness Scale survey (“SDLRS”) (Guglielmino, 1977; Guglielmino & Guglielmino, 1991a), which identifies eight broad factors of self-direction. The SDLRS is
a self-reporting questionnaire with Likert-type questions and a guide for interpreting the scores (Learning, 2013).

Although the SDLRS is widely used and supported (Delahaye & Smith, 1995; Durr, 1992), and is quite comprehensive in terms of instructions and guides, there has also been some criticisms concerning a number of items on the instrument that do not correlate well to the total score (Field, 1991; Straka & Hinz, 1996) and that it includes too many questions, which might make it cumbersome to conduct.

As a result, some institutions of programs might choose to develop their own self-directed learning assessment tool based on the work of Fisher, et al (2001), which posits that self-directedness can be viewed within the following subscales: self-management, desire for learning, and self-control. So, with the different self-directed learning readiness models that are available, a decision has to be made about which model to use. If an institution is interested in having a manageable, institution-specific assessment, it would be very useful to develop a model that focuses on subscales, such as self-management, desire for learning, and self-control (Fisher, et al, 2001). If, however, the primary purpose is to know how cohorts at one institution relate to those at other institutions (which would enable faculty and administrators to evaluate their programs within the context of higher education as a whole), it is only wise to use Guglielmino’s Self-Directed Learning Readiness Scale (Figure 1).

The main goal of the institution’s assessment tool regardless of which model is used should be to identify the following ranges of scores:

Figure 1. Self-directed learning readiness scale (Guglielmino, 1977)

Self-Directed Learning Readiness Scale, also called Learning Preference Assessment, is a questionnaire that has 41 questions, of which only the first 19 are reproduced below. Students use a 5-point Likert scale to identify how true the statements are.

1. I'm looking forward to learning as long as I'm living.
2. I know what I want to learn.
3. When I see something that I don't understand, I stay away from it.
4. If there is something I want to learn, I can figure out a way to learn it.
5. I love to learn.
6. It takes me a while to get started on new projects.
7. In a classroom situation, I expect the instructor to tell all class members exactly what to do at all times.
8. I believe that thinking about who you are, where you are, and where you are going should be a major part of every person's education.
9. I don't work very well on my own.
10. If I discover a need for information that I don't have, I know where to go to get it.
11. I can learn things on my own better than most people.
12. Even if I have a great idea, I can't seem to develop a plan for making it work.
13. In a learning experience, I prefer to take part in deciding what will be learned and how.
14. Difficult study doesn't bother me if I'm interested in something.
15. No one but me is truly responsible for what I learn.
16. I can tell whether I'm learning something well or not.
17. There are so many things I want to learn that I wish there were more hours in a day.
18. If there is something I have decided to learn, I can find time for it, no matter how busy I am.
19. Understanding what I read is a problem for me.
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- High SDLRS Scorers (people who are “highly successful at recognizing their learning needs and can often plan and implement individual learning projects”);
- Average SDLRS Scorers (people who are “likely to be successful in more independent learning situations, but may not be fully comfortable with planning and implementing individual learning projects”); and,
- Below Average SDLRS Scorers (people who “usually prefer very structured learning options such as lecture and traditional classroom settings”) (Learning, 2013).

For students with low Self-Directed Learning Readiness Scale scores, faculty could encourage or require them to complete an action plan that focuses on the following five areas (Codde, 2006; Knowles, 1989; Knowles, et al, 2005):

1. **Learning Objectives:** The knowledge, skills, attitudes, and values to be acquired by the learner;
2. **Learning Resources and Strategies:** How these objectives will be accomplished;
3. **Deadlines:** Consulting the syllabus to identify target dates for their accomplishment;
4. **Specific Assignments or Projects:** Evidence presented to demonstrate that the objectives have been accomplished; and,
5. **Grading Criteria:** How this evidence will be judged or validated.

Having students complete an action plan enables them to identify the learning objectives, learning resources and strategies, deadlines, and the specific assignments or projects that fulfill those objectives. Most of this information should already be articulated on the course syllabus; however, faculty could also encourage students to confirm how well they understand how those assignments or projects will be evaluated (which will be discussed in more detail in the following section).

In summary, for the first online course students take, having a lecture and class discussion about self-directed learning will give students and faculty opportunities to identify attitudes about the independent nature of online learning, the benefits of online learning, and expectations about course goals, assignments and tasks. In addition, encouraging students to complete an action plan at the beginning of each course will give them a tangible tool that enables them to become more self-directed. As students take more online courses, the need for this recommendation will become less urgent.

**Recommendation #2: Facilitate Practices That Keep Students on Track**

Although self-directedness is very important for online learners, faculty’s role in keeping students on track is instrumental to student outcomes and retention. There are five specific practices that faculty could take to keep students on track (Hricko, 2003; Lazarevic, 2011; Howell, et al, 2004): (1) keep class size small (perhaps, 20-30 students maximum); (2) track students’ online activities; (3) establish goals (i.e., target retention rate); (4) post an introduction video; and (5) interact with students as much as possible, either synchronously or asynchronously.

It is the last suggestion about faculty-student interaction that is contentious. While it is supported by Hsu & Shiue (2005), Shea, et al (2006), Arbaugh & Hwang (2006), and Laves (2010), it seems to contradict the basic premise that online students need to be competent self-directed learners (Hasler-Waters & Napier, 2003; Allen & Seaman, 2013; Tanner, et al, 2003; Tanner, et al, 2009). Be that as it may, faculty-student interaction that is contentious...

Teaching presence can be displayed through \textit{directed facilitation}, the “strong and active presence on the part of the instructor—one in which she or he actively guides and orchestrates the discourse” (Shea, et al, 2006, p. 185). The components of directed facilitation include:

\begin{itemize}
  \item Whether the instructor is seen as drawing in participants by creating an accepting climate for learning;
  \item Reinforcing student contributions, injecting their own knowledge, and confirming student understanding;
  \item Keeping students on track by identifying areas of agreement and disagreement and diagnosing misperceptions; and,
  \item Helping to resolve disagreements by looking for areas of consensus in the areas that students report higher levels of connectedness and learning (Anderson, et al, 2001).
\end{itemize}

For Ekmekci (2013) teaching presence focuses on the use of online communication protocols and interactions that highlight the questions that need to be addressed in order to design, organize and deliver instruction, and the stages along the way when discourse facilitation is necessary (see Figure 2). Stein & Wanstreeet (2013) find that teaching presence can be exhibited through “e-coaching”, the process of staying connected with students synchronously and asynchronously, and guiding them through the steps, processes, activities, etc. they have to undertake.

When faculty intervene by asking questions at specific points throughout the course, they develop their students’ complex analytical skills (O’Connell, 2002) in such a way that it becomes equivalent to the benefits of face-to-face instruction. Not only does this keep students on track, but it can also lower attrition rates and increase comprehension of course concepts and applications. For example, Sitzmann (2010) finds that attrition can be reduced by 17% and test scores increased.

\textbf{Figure 2. Learning intervention time line (Ekmeki, 2013)}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{learning-intervention-time-line}
\caption{Learning intervention time line (Ekmeki, 2013)}
\end{figure}
by 5%, because students spend additional time reviewing materials to answer questions rather than just clicking through to the next screen.

Perhaps the most significant way to keep students on track is to have frequent faculty-student communication contacts within a supportive communication climate (Rovai, 2001b & 2002). There has been much discussion about the value of a supportive communication climate (Hassan, et al, 2011; Keyton & Beck, 2009; Klenk, & Hickey, 2010; van den Hooff & de Ridder, 2004); however, Gibb (1961) offers specific, prescriptive actions that can be taken to create such a climate, which include using discourse that focuses on: Description (accurately describing the details of a situation); Problem Orientation (finding the reasons or causes of a problem rather than blaming the individuals involved); Spontaneity (being open to ideas even if they conflict with one’s own); Empathy (expressing genuine concern for others by viewing situations from their perspectives); Equality (treating all the members of an organization with dignity regardless of the position they hold); and, Provisionalism (having a flexible approach to solving problems or pursuing opportunities).

Similar to self-directed learning readiness, the level of teaching presence can be measured and evaluated using the Teaching Presence Scale Survey (Shea, et al, 2006; Jinks, 2009) (see Figure 3). However, what stands out is the absence of directions for interpreting the results of the survey. Fortunately, it uses a five-point Likert scale to identify responses but the scale uses referents that are difficult to use for administrative or program purposes (i.e., Scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree).

It would be easy to modify the scale as follows: 1 = unacceptable, 2 = below expectation, 3 = meets expectation, 4 = exceeds expectation, 5 = superior. This way, a response of “3 - meets expectation” could be used as a base point. Any scores below “3” could indicate areas where faculty might not be perceived as being “present”, and any scores above “3” could be used to indicate “best practices” that all faculty could adopt. An additional feature that is missing from this survey is the inclusion of student input. In other words, it does not include open-ended questions to solicit how to improve teaching presence from the students’ perspective.

One way to invite students to offer their suggestions is simply to add a question similar to the following:

For any response that you have marked below a score of 3, please describe the types of changes you feel the professor could make to give you and your classmates a greater sense that he or she is actively engaged in your learning.

In summary, teaching presence is a critical factor in keeping students on track, and by reviewing the students’ completed Teaching Presence Scale survey by, for example, the 5th week of a 15-week class, both faculty and students will gain a sense of how the class is going, and there could be adequate time to make any corrections if needed.

**Recommendation #3: Increase Students’ Ability to Identify with Their Groups**

Online learners mainly have to identify with two groups: their classmates as a whole and the members of their team project groups. However, because virtual groups have the most uncertainty, least visibility, most diversity and fewest opportunities to engage in politeness rituals (Fiol & O’Conner, 2005; Kankanhalli, et al, 2007), groups members have great difficulty to identify with or have a sense of belonging to these groups (Ashforth & Mael, 1989; Mannix, et al, 2002). To improve a student’s identification with classmates as a whole, Hubbard (2013a) suggests having each student give a 2-3 minute introductory presentation during the first week of class that covers the goals of their action plan (see Recommendation #1), highlights from their professional life, and a summary of a significant life experience. If the class...
Figure 3. Teaching presence scale (Shea, et al, 2006)

The Teaching Presence Scale survey is based on the following 17 questions. Students would use a 5-point Likert scale to evaluate the level of teaching presence within their class.

1. Overall, the instructor for this course clearly communicated important course goals (for example, provided documentation on course learning objectives).
2. Overall, the instructor for this course clearly communicated important course topics (for example, provided a clear and accurate course overview).
3. Overall, the instructor for this course provided clear instructions on how to participate in course learning activities (e.g. provided clear instructions on how to complete course assignments successfully).
4. Overall, the instructor for this course clearly communicated important due dates/time frames for learning activities that helped me keep pace with this course (for example, provided a clear and accurate course schedule, due dates, etc.).
5. Overall, the instructor for this course helped me take advantage of the online environment to assist my learning (for example, provided clear information on how to participate in online discussion forums).
6. Overall, the instructor for this course helped students to understand and practice the kinds of behaviors acceptable in online learning environments (for example, provided documentation on “netiquette” i.e. polite forms of online interaction).
7. Overall, the instructor for this course was helpful in identifying areas of agreement and disagreement on course topics that assisted me to learn.
8. Overall, the instructor for this course was helpful in guiding the class towards understanding course topics in a way that assisted me to learn.
9. Overall, the instructor in this course acknowledged student participation in the course (for example, replied in a positive, encouraging manner to student submission).
10. Overall, the instructor for this course encouraged students to explore new concepts in this course (for example, encouraged “thinking out loud” or the exploration of new ideas).
11. Overall, the instructor for this course helped to keep students engaged and participating in productive dialog.
12. Overall, the instructor for this course helped keep the participants on task in a way that assisted me to learn.
13. Overall, the instructor for this course presented content or questions that helped me to learn.
14. Overall, the instructor for this course helped to focus discussion on relevant issues in a way that assisted me to learn.
15. Overall, the instructor for this course provided explanatory feedback that assisted me to learn (for example, responded helpfully to discussion comments or course assignments).
16. Overall, the instructor for this course helped me to revise my thinking (for example, correct misunderstandings) in a way that helped me to learn.
17. Overall, the instructor for this course provided useful information from a variety of sources that assisted me to learn (for example, references to articles, textbooks, personal experiences or links to relevant external websites).
Student Outcomes and Retention in Online Academic and Training Programs

has too many students, the class could be divided into smaller groups (perhaps, 15-20) depending on the capacity of the Course Management System (e.g., BlackBoard, Moodleroom and Sakai) and the associated web-conferencing platform.

These presentations should occur during real time (Fiol & O’Conner, 2005), which could be achieved using web-conferencing platforms like GoToMeeting, WebEx, or Adobe Connect. The students could also provide a link to a personal website or professional networking site, like LinkedIn, in addition to posting information about themselves on the Course Management System. Whenever team projects are assigned, the team members could also give their teammates a 6-7 minute introductory presentation (in real time) that covers the member’s perspective on team goals and the skills the member brings to the team to accomplish those goals (Hubbard, 2013a). In addition to helping each team member identify with the team, it also aids in the team formation stage (West, 1996; O’Hair, et al, 2010).

Perhaps, the most significant factor in increasing students’ ability to identify with both groups lies within the social presence of the class (Lazarrevic, 2011; Cervantez, 2010; Ekmekci, 2013). The three main aspects of social presence are effective communication, open communication and group cohesion (Garrison, 2007). The lack of social presence has a negative impact on student perceptions about how well they are performing or have performed in online classes (Tanner, et al, 2009; Picciano, 2002; Song, et al, 2004); however, as a sense of social presence increases, the students will have a greater perception of learning and the presence of faculty (Richardson & Swan, 2003).

Social presence can also be based on the premise that a “community can exist independently from geography, physical neighborhoods, and campuses” (Rovai, 2002, p. 199), when members have “feelings of connectedness, cohesion, spirit, trust, and interdependence” (Rovai, 2002, p.201). To measure social presence, Rovai (2002) developed the Classroom Community Scale (see Figure 4). However, it is difficult to interpret the results of the Class Community Scale because of the same reasons noted above for the Teaching Presence Scale. Therefore, in addition to the modifications to the five-point Likert scale suggested above for the Teaching Presence Scale Survey (see Recommendation #2), some of the questions on the Classroom Community Scale Survey would have to be modified, because this survey has a mixture of positive and negative questions. For example, the original questionnaire has questions similar to Question 1, “I feel that students in this course care about each other” and Question 5, “I do not feel a spirit of community”, which make it difficult to use the Likert scale to quantify the responses accurately. It is easy to compensate for this inconsistency by changing the negative questions to positive ones (Figure 4 already includes these modifications).

By re-phrasing the questions as indicated in Figure 4, a score of “3 - meets expectation” would have the same meaning for all questions. That being done, the score of “3 - meets expectation” could be used as a base point. Any scores below “3” indicate where students do not have a stronger social presence, and any scores above “3” could be used to identify “best practices” that could be adopted. Again, what is missing from this survey is the inclusion of student input, which could be obtained by adding a question similar to the following:

For any response that you have marked below a score of 3, please describe the types of changes you think could be made to give you and your classmates a greater sense of identifying with your groups.

The timing of the survey is also critical, and conducting the survey by the end of the first third of the class (e.g., by the 5th week of a 15-week class), would give both faculty and students a sense of how the class is going and adequate time to make any corrections if needed.

The last practice that enhances students’ identify with the group is to have frequent meetings
of the entire class, and “monthly face-to-face contact can generate a significantly stronger social presence than a similar program with only annual face-to-face” meetings (Rovai, 2001a, p. 115). However, in that many online programs have students in dispersed geographic locations, consideration has to be given to how to manage these monthly meetings in a synchronous environment rather than trying to have in-person, face-to-face meetings. Aside from the impact of time zone differences and other logistical problems associated with organizing such a meeting, the number of students who would be logged on and participating in the meeting also creates challenges. It is common that undergraduate, required courses or graduate MBA programs, for example, usually have large cohorts, which makes meeting at the same time fairly impossible or unmanageable, especially considering the participation constraints of web-conferencing platforms.

One solution could be to treat these social presence meetings the same way that discussion sessions are conducted—with small groups of students from the same class. So, instead of trying to arrange a monthly meeting with 75 participants, the class could be subdivided into four monthly

*Figure 4. Classroom community scale (Rovai, 2002)*

The Classroom Community Scale survey is based on the following 20 questions. Students would use a 5-point Likert scale to evaluate the level of social presence within their class. Questions related to connectedness are numbers 1, 3, 5, 7, 9, 11, 13, 15, 17, and 19. Questions related to learning are 2, 4, 6, 8, 10, 12, 14, 16, 18, and 20.

1. I feel that students in this course care about each other
2. I feel that I am encouraged to ask questions
3. I feel connected to others in this course
4. I feel that it is easy to get help when I have a question*
5. I feel a spirit of community*
6. I feel that I receive timely feedback
7. I feel that this course is like a family
8. I feel easy exposing gaps in my understanding*
9. I feel connected in this course*
10. I feel encouraged to speak openly*
11. I trust others in this course
12. I feel that this course results in only modest learning
13. I feel that I can rely on others in this course
14. I feel that other students help me learn*
15. I feel that members of this course depend on me
16. I feel that I am given ample opportunities to learn
17. I feel certain about others in this course*
18. I feel that my educational needs are being met*
19. I feel confident that others will support me
20. I feel that this course promotes a desire to learn*

*Items that are modified from the original in order to assure consistent interpretation of the 5-point Likert scale.*
meetings with 15-20 participants, which might also make it easier to avoid or reduce the impact of different time zones and other logistical problems.

In summary, taking specific steps to increase social presence, measuring the extent of that presence, and taking appropriate actions where necessary should give students a greater sense of identifying with their groups, which will provide a foundation from which to complete team tasks, assignments and projects in a way that is mutually gratifying to all members.

**Recommendation #4: Enable Student Groups to Achieve Their Goals**

Successful teams are those that cohesively move efficiently through the four stages of team development (West, 1996; O’Hair, et al, 2010), specifically with the use of team management tools—e.g., team member contact information, team meeting schedules, minutes of team meetings, project management plans, and performance evaluation (DuFrene & Lehman, 2002; Hubbard, 2003, 2011). In addition, the teams that have strong communication skills and use those skills to manage the relationships of team members and external stakeholders are the ones that have the greatest likelihood of achieving their goals (Petska & Berge, 2005). However, in that virtual teams do not have opportunities for actual, real-life interactions (either formal or informal), a more prescriptive approach is needed to compensate for that deficiency (Hubbard, 2013b).

Just because students are placed into groups to work on projects does not mean that they will have effective collaboration (Brown, et al, 2006). These groups need clear organization and open lines of communication to build trust (Hasler-Waters & Napier, 2002), and they work best when they are relatively small—about 4-5 members (Tinker, 2004). More importantly, a team charter would enable them to manage the processes that lead to team collaboration and success (Schoenfeld & Berge, 2005; DOD, 1998; Schoenfeld & Berge, 2005; Hunsaker, et al, 2011; Chung, 2013; Aranda, et al, 1998; Holtham et al, 2006; McDermott, et al, 1998; Willcoxson, 2006).

The three basic versions of team charters include the following elements:

1. Missions and objectives, metrics to evaluate team progress, scope of team responsibilities, relationships and reporting structures, authority and accountability, resources, and a team membership list (DOD, 1998)
2. Summary of the team assignment, team participants, rules and responsibilities, communication tools, and communication guidelines (Schoenfeld & Berge, 2005)
3. Mission statement; vision; boundaries; operating guidelines, norms and expectations; evaluation and discipline; and charter endorsement (Hunsaker, et al 2011)

Of the three, the second one addresses the most critical elements of team success: communication tools and communication guidelines. While it might seem time-consuming for groups to go through the process of completing a charter (see Figure 5), it allows team members to identify and quantify the skills they bring to the group (Hubbard, 2013a), in addition to providing team members with an increased level of specificity concerning team goals, strategies and processes. Furthermore, it enables global virtual teams to consider the impact of culture and take appropriate actions to identify any cultural miscommunications and misunderstandings (Morrison & Conaway, 2006; Varner & Beamer, 2011; Hubbard, 2013b).

In summary, the use of team management tools enables teams to come to a consensus about team goals, tasks and processes. To facilitate the process, faculty could have discussions about teams, team development and team management tools before the first team project is assigned. Having students complete a team charter during the forming stage...
of the team, and intervening at specific deadlines to see how the team is functioning allows faculty to equip teams with a tangible method to achieve their goals.

**Recommendation #5: Create Opportunities for Faculty to Share Best Practices**

Online teaching differs significantly from face-to-face teaching, and “the growth of online courses and programs has increased the need for faculty to become comfortable with online teaching and gain the necessary skills to make online courses a success” (Allen & Seaman, 2011, p. 6). Because student success and retention in online courses is so vitally tied to faculty-student interactions, the extent to which faculty can be supported to facilitate the above-described recommendations is imperative. It has been noted that faculty in traditional, face-to-face programs have feelings of being isolated from their students (Duncan & Barnett, 2009; Howell, et al, 2003), and they are also isolated from other faculty due to the very nature of university teaching. However, online faculty can even be more isolated from their colleagues, especially if they have limited time on campus participating in departmental meetings or other activities. And, as such, their ability to obtain and share best practices can be quite limited.

Therefore, it would be helpful for administrators to create opportunities for faculty to share ideas and exchange best practices in order to improve the likelihood of a successful online program (Tanner et al, 2004). Although about 6% of institutions report that they do not provide any training or mentoring programs for their online faculty, most have one or more of the following types: Internally run training courses (72%); Informal mentoring (58%); Formal mentoring programs (about 40%); or, Externally run training courses (about 21%) (Allen & Seaman (2011).

If the intent of such training is to improve the level of instruction and resources available

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**Figure 5. Sample team charter**

<table>
<thead>
<tr>
<th>Team Name:</th>
</tr>
</thead>
</table>

**Summary of Team Project:** Give a basic description of the project and the major deadlines that have to be accomplished.

**Team Members:** Give a short bio of each team member, the skills that each member brings to the project, and identify any planned absences during the project.

**Roles and Responsibilities:** Identify each team member’s role (i.e., contact person, technical coordinator, etc.).

**Communication Tools:** Identify the communication tools team members will use to stay in contact with one another (i.e., email, phone, chat, web-conference, etc.).

**Communication Guidelines:** Identify response expectations (i.e., how quickly team members are expected to respond to phone calls and emails) and conflict resolution procedures (i.e., what will be done if the communication guidelines are not followed or if roles and responsibilities are not being fulfilled).

*Based on Schoenfeld, Janet, & Zane Berge. (2005).
to online faculty, to attract, retain and promote exceptional faculty, and improve individual and organizational performance and effectiveness, then a commitment to peer-to-peer mentoring is an approach that has great potential at yielding the best results if done effectively. Unlike mentoring junior faculty (Luna & Cullen, 1995; WSU, 2013), peer-to-peer mentoring places both faculty members in the role of “coach” in that they could learn from their own and each other’s experiences, mistakes and successes (CET, 2013).

Much attention has been given to the benefits of mentoring, the roles involved in mentoring, qualities of good mentors, and guidelines for implementing and running mentoring programs. However, not much has been identified about the element that appears to be missing from all other discussions about mentoring—the benefits of having both mentor and mentee observe the other while engaged in teaching. Kirk (2013) not only discusses the merits of mentoring and gives advice about how to manage mentoring programs, but also provides details about how to include peer observations as an integral part of such programs. Not to be confused with classroom observations as part of performance reviews or evaluations, peer observation is the practice of having colleagues visit classes to provide feedback and advice to one another about subject matter, activities and teaching performance (Kirk, 2013).

The Peer Observation Program at Marshall School of Business (University of Southern California) is an example of how administrative support aligns teaching objectives with teaching outcomes, and provides an enriched learning experience for both students and faculty (Kirk, 2013). The Program is a three-step process (POPP Committee, 2010):

- **Pre-Observation Conference:** Mentor and mentee determine the role the mentor will have during the visit (e.g., passive observer or participant) and review syllabi, assignments, and other relevant course materials; discuss objectives for the class visit; and agree on the feedback instrument, if any, that will be used.

- **The Observation Itself:** Mentee introduces mentor to the class and discusses the purposes of the mentor’s attendance; and mentor evaluates items specified on the feedback instrument and attempts to capture holistically what occurs in the classroom.

- **Post-Observation Conference:** Mentor and mentee discuss their observations about the class visit and use specific examples as a means of finding areas of improvement for both mentor and mentee.

Successful peer observations should generate reinforcement of positive teaching behaviors and suggestions, ideas and thoughts that will inspire productive changes in teaching behaviors. It is a mentor’s responsibility to provide both feedback and motivation. The mentee should be inspired to build on effective, existing methods and behaviors, and to form a mentoring relationship that will continue (POPP Committee, 2010).

In summary, online faculty need support in order to share best practices and mentor one another, which can be enhanced if administrators foster that process by creating peer observation and other mentoring opportunities for them to do so.

**Recommendation #6: Implement a Learning Management System That Tracks the Effectiveness of the Other Recommendations and Monitors Retention Rates**

Whenever a recommendation or proposal is adopted, it is essential that there be a system of monitoring the process in order to provide feedback on how well the recommendation or proposal is actually working. This practice is integral to all processes, including decision-making, conflict resolution, and problem solving. Using a Learn-
Learning Management System (LMS) provides a means of delivering course content and monitoring how well students interact with that content; however, it also provides a means of quantifying course- and program-level retention rates. Similar to Course Management Systems like BlackBoard, MoodleRoom and Sakai, which are mainly course content delivery systems (although they could have elements of LMSs), the purpose of LMSs is to deliver course content and collect and present data for supervising the learning process of individual students, courses, and the organization as a whole (Szabo & Flesher, 2002).

There are two main versions of LMSs: commercial systems like Topyx, and proprietary systems like LearnShare. Because commercial LMSs can be quite expensive (typically starting around $500,000), it is important for institutions to consider the return on investment of purchasing such a system. Proprietary LMSs can be just as expensive; however, the costs and benefits can be shared if several institutions develop the system as a consortium (similar to the way LearnShare was developed collaboratively among General Motors, Motorola, Owens-Corning, Deere & Co, and 3M Corp.). “LearnShare has been an excellent way to benchmark with [member] companies to learn what they are doing with their training efforts” and “leverage their collective strength …” (Bartholomew, 2005, p. 36).

It should be noted that an LMS does not have to be an electronic system in order to work effectively. Manual systems, though somewhat cumbersome, can also provide meaningful information if faculty identify and assess individual student’s learning or training goals, track the progress towards meeting those goals, record the ultimate rate at which students achieve those goals and complete the course, and report completion rates throughout the organization. This process would give stakeholders a greater sense of how well their particular course or program is doing in relation to others within the organization and enable them to compare the retention rates at their institution or organization to those of others. This process can only work, however, if faculty performance evaluations are not tied to their students’ retention rates, and if they have to be, that there be a system in place, like Recommendation #5, that would provide professional develop and mentoring opportunities for faculty to develop the skills that would enable them to have a direct impact on those rates.

FUTURE RESEARCH DIRECTIONS

Online education has been present in one form or another for decades, and numerous research studies have already been conducted to test various hypotheses. However, while these studies have been quite enlightening, especially those related to individual aspects of online education, there appears to be a gap in what is available at the program level of individual institutions or among institutions as a whole. The on-going efforts of Allen & Seaman (2100, 2013) and DeAngelo, et al, (2011) contribute greatly to an overall understanding about academic online education, especially as it concerns perceptions from various stakeholders. Now, it is time to have quantifiable data about online retention rates and the long-term impact of the six recommendations described above on retention. With this information more readily available, institutions, businesses and other organizations can have a firmer understanding of the effectiveness of their programs and the sense of confidence that evolves as a result.

CONCLUSION

For online education to be successful, it is essential for the technology to provide seamless synchronous and asynchronous faculty-student,
student-student and faculty-faculty interactions. In addition, students have to be (or be willing to become) self-directed learners, and faculty have to enable that process by generating a sense of teaching presence and class community in addition to teaching their subject matter. Furthermore, there needs to be an environment in which faculty have opportunities to exchange ideas and best practices, and by doing so, it is anticipated that the barriers to the adoption of online learning will decrease, and the factors that facilitate student success and retention will increase.

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**ADDITIONAL READING**


College retention rates improving at 2-year schools, declining at 4-year. (2011, Jan). *New York Beacon*.


**KEY TERMS AND DEFINITIONS**

**Faculty Mentoring:** The process of one faculty member guiding another in the pursuit of best practices within their field.

**Group or Team Identification:** The extent to which group (or team) members can identify themselves (in terms of having similar goals, work ethic, common understanding, etc.) with the other members of a group.

**Intercultural Communication:** The interactive verbal and non-verbal communication that takes place between members of one culture with members of another culture (e.g., how a Russian business person interacts with an American business person). Not to be confused with cross-cultural communication, which compares, for example, how Americans conduct business with Americans vs. how Russians conduct business with Russians.

**Online Learning:** Sometimes referenced as e-Learning, means the individual courses or entire degree or training programs that are delivered predominantly through synchronous and asynchronous electronic platforms. Although there may be some face-to-face interactions (as in orientations sessions and periodic meetings), a learner would have access to faculty and all the learning materials online without ever needing to see someone in person.

**Peer Observation:** The practice of having faculty colleagues visit each other’s classes (either a physical or virtual class) to provide feedback and advice to one another about subject matter, activities, and teaching performance. This process does not have to be part of a formal performance evaluation process, but is an integral part of faculty mentoring.

**Retention Rate:** The percentage derived by comparing the number of students who start a course or academic program vs. the number who actually complete the course or program. Sometimes, the term “completion rate” is used synonymously. In addition, the term “attrition rate” is used to identify the percentage of students who enroll in a course or program and then withdraw before actually completing the course or program.

**Retention:** The process of students staying enrolled in a course or academic program and actually completing the course or program. Sometimes, the term “attrition” is used to show the opposite process, i.e., the process of students withdrawing from a course or program before they actually complete the course or program.

**Self-Directed Learning:** The process in which a learner identifies the learning objectives of a course of study, the resources available for completing the course of study, the assignments and projects and associated deadlines, and develops strategies to complete the course of study with or without the assistance of the faculty member or instructor.

**Social Presence:** The extent to which students feel connected to their classmates and that their classmates are present and available to offer assistance, advice and guidance. Not to be confused with group or team identification, which includes the similarities among the group or team members.

**Teaching Presence:** The extent to which students feel that their teacher or instructor is connected to the students and is present and available to offer assistance, advice and guidance either in person or through the use of electronic media.

**Team Charters:** The process of team mates identifying and understanding the goals of the team, the contributions that each team member brings to the team, and the processes and tasks the team will conduct in order to complete their goal. This mutually agreed upon understanding is then explicitly stated (usually in writing) as a charter.
Chapter 9

Blending in the Humanities:
Course Model and Assessment Results

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ABSTRACT

Does technology de-place opportunities for meaningful engagement? Is the reduction of face-to-face time in a blended course a loss to students? And if so, what students are most affected by this shift? Can a blended course only work in disciplines that rely on teaching “facts” or can the recent emergence of digital humanities serve as a framework and provide disciplinary-specific insights for the use of teaching technology in the humanities? This chapter explores the use of learning technology and blended design in an introductory humanities course. Further, the chapter presents a blended course model, assessment data, and ideas for contextual reflection about how change in higher education paradigms is affecting the humanities in order to address them in a cooperative, non-disruptive way. Finally, the unique context, assumptions, and causes for resistance to change in the humanities with regard to technology and blended pedagogy are discussed. This chapter is intended to help readers anticipate and address particular disciplinary perceptions of blended learning.

INTRODUCTION

Why blend in the humanities? This chapter will explore the use of learning technology and blended design in an introductory cinema studies course offered in the humanities. Often it is asserted that technology does not allow for types of learning contexts deemed central to humanities such as social and communal interaction, spontaneity, and embodied presence. Does technology de-place opportunities for meaningful engagement? Is the reduction of face-to-face time in a blended course a loss to students? And if so, which students are most affected by this shift? Can a blended course only work in disciplines that rely on teaching “facts” or can the recent emergence of digital humanities serve as a framework and provide disciplinary-specific insights for the use of teaching technology?
Blending in the Humanities

in the humanities? Surveys of students, faculty and administrators have shown distinct perceptions of the effectiveness of blended courses, in contrast to fully online courses (ECAR, 2013; Allen, Seaman, Gerrett, 2007).

This chapter will present a blended course model, assessment data, and ideas for contextual reflection about how change in higher education paradigms is affecting the humanities. The chapter seeks to address these issues in a cooperative, non-disruptive fashion. It will also discuss the unique context, assumptions, and causes for resistance to change in the humanities with regard to technology and blended pedagogy. It will help readers anticipate and address particular disciplinary perceptions of blended learning.

The pace of change in higher education is increasing. Competition to the traditional undergraduate residential model comes from more than for-profit universities; it comes from MOOCs, competency-based/personalized learning programs, and from online degree programs, some largely built by corporate partners of universities. This chapter will not discuss the merits or even pace of this change. Rather, the guiding questions are: How will the humanities be affected by the inevitable changes? How will the call for professionalization and the pressures to prepare students for specific careers with specific skills be answered? How can the core values of the humanities for all students’ education be preserved while ongoing changes seemingly privilege “fact-based” knowledge? Furthermore, how can humanities scholars and teachers be in charge of the changes that affect the field? How can we answer the call to be more efficient while preserving the quality of instruction and student learning outcomes? The basic premise of this chapter is to enable colleagues in higher education to take charge of change rather than resign to passive resistance. Our blended course design model permits preservation of the essential core values of teaching the humanities for student success with institutional demands for efficiency in mind through the use of teaching technology.

COURSE MODEL: CINE 101, INTRODUCTION TO CINEMA, AND VISUAL CULTURE

At Northern Arizona University in 2012, a course in Cinema Studies was redesigned as a blended course in the first round of the President’s Technology Initiative. The course has since served as a pilot and model across all disciplines, as faculty redesign more courses in the second and third rounds of the initiative. Total enrollment in the multi-section course (and thus the number of class sections offered) since the blended redesign was implemented has increased by over 1000%, from 31 to 347 in just two years, and helped bolster a small humanities program (Cinema Studies).

The course has increased efficiency in delivery—one of the main institutional goals of the President’s Technology Initiative—through its hybrid schedule: it meets once a week, instead of twice, for 75 minutes of face-to-face time. The other half of the course is conducted online. The utilization of classroom space has thus increased by 100%, as the course can share a 150-minute time slot in the same classroom among pairs of its sections. The course has also been able to more than double enrollment capacity in each section (from 30 to 70), increasing efficiency for the university and the department. (However, it has not reached its goal of conserving faculty effort, as managing the higher number of students in each section has more than outweighed the in-class time saved for the instructor.)

The course was designed for two programs, and its design principles were aligned with their respective student learning outcomes: 1. The Liberal Studies program at Northern Arizona
University and 2. The new interdisciplinary minor in Cinema Studies, housed in the Department of Comparative Cultural Studies.

1. Liberal Studies: Design for Student Success

The course bears Liberal Studies credit at Northern Arizona University, within the “Aesthetic and Humanistic Inquiry” (AHI) block, with a focus on the skill of effective writing. Courses in this block involve students in the study of the human condition through philosophical inquiry and in analysis of the various forms of creative expression. The course specifically focuses on film and the various forms of visual culture. Students develop an understanding of the relationship between the historical, political, social, and aesthetic context and the human creative expression of visual culture and cinema. The course makes use of major conceptual frameworks and concepts such as the theories of representation and agency. It explores the diversity of cinematic expressions informed by national, global, ethnic, and gender identities. Students also develop their capacities for analysis and ethical reasoning through a variety of means, including close reading of film texts and comparative explorations of the materials of visual culture. The course incorporates key design principles from the First Year Learning Initiative (FYLI) at Northern Arizona University, an innovative program that is geared toward socializing freshmen for success and excellence. (The course gained official FYLI certification during its initial redesign phase in summer 2012.)

The course explicitly addresses critical practices such as time management and study skills. The syllabus includes a section on the types of meetings to expect in this blended class. It also urges students not to fall behind. Class assignments are scheduled on a regular and thus predictable basis, due on the same day of the week, at the same time. This encourages routine and easier time management. There are no pop quizzes, additional assignments, or modifications to the assignments listed on the syllabus so students are not blindsided with a change in expectations or deadlines. (Revisions to the class assignments are made, if necessary, between semesters.) All class materials are easily accessible via BlackBoard Learn, including all films assigned for this class and additional ones mentioned in the textbook. Students can work at their own pace and complete tasks and assignments when it is convenient for them.

The course offers a realistic understanding of the time and effort that is needed to succeed. Students respond to a question about their expectation of time involved in taking this class in the initial survey. The instructor then directly addresses misconceptions during the first week of the semester. The learning activities and assignments are structured in a way that emphasizes their connection and scaffolding. Students have a clear understanding of progression. In addition, the headers on each BlackBoard Learn chapter page tell students what to expect in a chapter, how it relates to the last one, and what parts of it will be used later in the course, i.e. what will be on the exams and what will come in useful for the essay. Furthermore, all these future assignments are already visible at the beginning of the semester so that students can build realistic expectations about the effort involved in succeeding.

The course explains how to access class materials and other academic support programs. All class materials, except for the actual textbook, are made available to students in the class shell on BlackBoard Learn. This includes all supplemental readings, all films assigned for this class, all extra credit assignments, and optional online resources. Students also know from day one how to work with the teaching assistants. A paragraph is included on the syllabus in which it states that meetings with the teaching assistants have the status of “class meetings,” i.e. they will be mandatory and should be expected on a regular basis (sometimes during scheduled class time, which the blended
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format allows for). This tactic focuses students’ attention on the main skill this Liberal Studies course is supposed to build: writing. Instructors identify groups and individual students to work closely with the teaching assistants on editing and revising all their written assignments throughout the semester, not just the final essay.

The course work is challenging and rigorous: Within the first two weeks of class, students are required to invest considerable effort. Students are assigned to fixed groups for the semester and work with their peers on the experiential part of the course. In order to reinforce the importance of this group set-up and to engage students with their respective group’s dynamics from the very beginning, the first group assignment has been designed to be both fun and connected to the interest in movies that most students bring to this class. As a group, they go to a commercial movie screening and report and reflect on the marketing strategies they were exposed to before they saw the movie. A short written report has to be handed in by all members of the group by the end of week 2. This assignment is low-stakes yet ensures that students engage from day one with the class material and, most importantly, with their peers. The assignment also requires basic writing, one of the focus areas of the class. During the same time, weeks 1 and 2, students also read the first textbook chapter and complete a basic reading comprehension quiz and a short written assignment. Both of these assignments are also low-stakes and students have the option of dropping the quiz grade should it prove to be the lowest of the semester.

Challenging and rigorous course work also maximizes student time on task. Readings and viewings are guided by and immediately reflected in the quizzes and assignments. All assignments are “open book.” Students know what they have to do with the material before they start engaging with it. Similarly, students connect with a local film event/series/festival with the goal to develop a marketing strategy for an on-campus audience. This clear goal is set from the beginning and the outcome is later demonstrated in an oral group presentation. Students know the “what,” the “where,” and the “why”—before they start the project.

The course develops the experiences that students need to succeed in more complex tasks, assignments, or analyses. Within each class module, assignments are scaffolded: from reading comprehension quizzes to short written assignments to exams. The modules build on each other and culminate in module 4, which guides students toward putting the individual pieces together for a complex film analysis essay—the disciplinary signature assignment for a cinema studies class. In the experiential part of the class, the students at first describe their own response to movie advertising. In the next step they analyze the marketing needs of a local film event. And in the final step, they themselves create a targeted marketing strategy. They execute this marketing strategy and report on its effectiveness in their final group presentations during the last two weeks of the semester.

The class is designed to actively engage students in multiple ways: with each other, with the material, and with the instructor. In addition to the group work in the experiential part students also engage with each other during the peer editing phases of the essay in module 4. Students engage with the content material in a direct way, by scheduling assignments immediately following the readings and viewings. There is no lag time between completing a reading, for example, and applying the new knowledge to a written assignment. The blended format allows the instructor to meet with students individually and in small groups on a frequent basis, rather than solely in full-frontal discussions in the lecture hall or in limited office hours. Toward the end of each module, as students progress from basic comprehension
to more complex, higher learning activities, the instructor is able to provide more guidance and feedback than in a regular lecture class.

The course requires attendance and/or participation to give students the best chance to succeed and to set up the expectations for success. In line with the university attendance policy, attendance in this class is mandatory and counts 12% of the final grade. Students are informed of this policy in the syllabus and also during class on the first day. They are also reminded of this policy via the Grade Performance Status (GPS) tracking system used at Northern Arizona University if they miss meetings. TAs report to the instructor about students who do not show up to scheduled meetings. In addition, attendance is taken the old-fashioned way in the face-to-face meetings and in meetings with the instructor. Furthermore, students have to “attend” virtually in a very structured fashion, and if they do not complete quizzes or chapter assignments the instructor intervenes immediately and contacts students about missed online sessions.

The course uses lectures strategically, if at all. Full-frontal lectures are used for part of the first class meeting: to give an introduction to the class format and content and to go over the class rules on the syllabus. After that, there are few traditional face-to-face lectures for the entire class. Content is processed online and students engage with the class material via tasks other than listening, such as group discussions, collaborative work, with in-class follow-up presentations.

To set clear expectations the course uses rubrics extensively and exclusively for the chapter assignments, for exams, and for the film analysis essay. These rubrics are presented on the syllabus and explained on the first day and again later in the semester, as students prepare for the exams and essay. The rubrics are used within BlackBoard Learn and linked to the assignments. They are used for online feedback.

The course offers early and formative feedback and frequent low stakes assessments. The chapter quizzes and assignments begin in week 1, build on each other, and are only worth 2% of the final grade for the class. Each module’s chapter quizzes and assignments then lead to a more complex module assignment, the exams. Students thus receive not just regular but scaffolded, formative feedback, as assignments get more complex. Students also receive early feedback for their group work. The first project is due at the end of week 2. During weeks 3-10 the instructor checks in frequently with each group to see how they are progressing on the marketing project. The groups then present their final reports and receive peer feedback during the last third of the semester.

The course addresses the current interests and conceptions that shape how students approach the discipline. Students take a survey at the beginning of class that asks them to reflect on what interests and conceptions they bring to the class. They are asked a similar question about how their ideas have changed on the two midterm surveys. During the introductory lecture, the instructor addresses common ideas students have about the study of film and provides examples of what students can expect to do in this class. For example, most students expect to watch films during class meetings in a film class. We tell them that this passive activity will happen outside of class, online, and that the different types of class meetings are used for more active and especially collaborative types of tasks.

The course takes into account students’ diverse cultural backgrounds. All online material has been designed and made accessible following Universal Design standards. All foreign films included in this class have subtitles to aid all students’ comprehension. Films have been chosen from a variety of global cultural and language contexts. Peer TAs help students with English language problems on the written assignments.

The course assesses the critical skills and/or knowledge students have when they enter the course. The first group assignment challenges students to put to use the knowledge they have about the movie industry and its marketing. They have to reflect on a process that most of them have been
exposed to in an unconscious fashion: advertising for blockbusters. They have the knowledge of what it is but might never have thought about what effect it has on them and their viewing experience through the creation of expectations. The instructors also assess students’ level of proficiency in basic writing through this first assessment and guide selected students to use tools available to them through the university-wide MyWriting Lab as deemed necessary.

The course effectively utilizes student learning outside of the classroom. The experiential part takes place outside of the classroom. It is a learning experience in the form of a mini-internship with a local film festival, film series or film event. It counts for 10% of the total grade. Additional encouraged activities include campus film events and Cinema Studies Club. These events vary from semester to semester, as programming changes. The course thus promotes social interactions among students. Students work intensely in assigned groups and also meet with other groups. In addition, they interact with students outside of the class at film events, e.g. students talk to people in the audience, at the receptions, and post-screening discussions. As part of some of the internships, students interview attendees at those events. Students also give presentations in other classes and student clubs on campus about the film festivals and series where they function as interns. They field questions from other students about these events.

The coordination scheme is prescriptive for the whole semester and ensures consistency, alignment, and student success. One experienced faculty member coordinates all sections during a given semester. Each section instructor meets on an ongoing basis with the coordinator to discuss the structure of the class, to ask questions about the assignments or online modules, and also to report student performance to the coordinator. Communication as a team is accomplished for those involved in delivering the course through regular meetings with all instructors and TAs of the individual sections. Consistency in course outcomes or objectives is accomplished by all sections using the same master syllabus and master BlackBoard Learn shell. Individual sections’ due dates of assignment vary, but the learning outcomes, modules, chapters, assignments, textbook, and other class projects are the same for each. All sections are taught in a blended format. In the case that individual instructors want to make changes to the course, they keep a log of ideas and thoughts for future semesters. An item that is invisible to students at the top of each chapter’s BlackBoard Learn content page serves as a journal for this purpose. Any entries made during the semester are easily extracted from each section and compiled at the time that revisions are made for the next semester. The coordination scheme also allows coordinators to take advantage of meaningful, actionable data about student engagement, achievement, and progress in the course. All section instructors use the university’s Grade Performance Status system at the same intervals during the semester (after each course module) so that students receive consistent and regular feedback. Assignments, grading rubrics, and attendance requirements are same for all sections and each instructor collects this data and shares it for reporting and assessment purposes.

2. Design for Disciplinary Conventions in Cinema Studies and Humanities

The course is the sole core, required course of a new interdisciplinary minor in Cinema Studies. It introduces students to the basic elements of formal composition, organizational structures, and historical periods of international filmmaking. The course provides a foundational understanding of discipline-specific terminology and conventions in the study of cinema and visual culture. Students also engage with cinema culture on the Northern Arizona University campus and in the larger Flagstaff community through mini-internships with
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film festivals and guided immersion in local film culture. The course prepares students for further study of film in Humanities, English, Philosophy, Electronic Media and Film, and Ethnic Studies, to name just the programs with the most popular film courses on campus. The course was also designed according to disciplinary conventions in cinema studies and humanities with regard to its signature assignment: the critical analysis essay, oriented to disciplinary expectations for effective writing in humanities courses. All other, shorter, written assignments prepare students for this signature assignment by focusing on particular elements of film analysis and essay writing.

In the signature assignment, students demonstrate the core learning outcomes of this course: reflection on a film’s production and the impact of distribution, promotion, and exhibition on the film experience; application of film-specific technical concepts, such as mise-en-scène, cinematography, editing, lighting, sound, and genre. They also demonstrate the ability to critically evaluate the film’s narrative plot, characterization, use of genre conventions, and historical context.

In terms of disciplinary modes of writing, students show that they are able to formulate a thesis that is easily identifiable, plausible, novel, sophisticated, insightful, and clear. Their analysis needs to be exciting, pose new ways of thinking about the material, and their work must avoid simple description or summary of information. Students’ use of evidence from the films and readings demonstrates in-depth understanding of ideas and critically evaluates concepts in an analytical, persuasive manner. The structure of their essay is evident (e.g. through strong topic sentences) and appropriate for the thesis. Ideas flow logically. Arguments are identifiable and reasonable. And finally, the essay needs to be written with excellent grammar, sentence structure, and correct use of punctuation and spelling. These expectations correspond to the basic requirements of good writing in the humanities. The rubrics used for grading and assessment in this class elaborate these expectations.

3. Blended Design Principles

The preceding paradigms (liberal studies and humanities) are integrated through the flipped structure of the course content, learning activities, and assignments and guided by the principles of blended design, based on case studies presented in Glazer (2012) and guidelines from Garrison and Vaughan (2009) and with the use of the Blended Learning Toolkit provided by the University of Central Florida.

The course is divided into content modules that correspond to the student learning objectives. All student in-class tasks and online written assignments are scaffolded with the ultimate objective of writing the three-page analysis essay. Each week a different element of essay writing is the outcome of students’ work. For example, in week 3, they focus on learning how to give evidence for a thesis. They are guided through the following stages, in accordance with Bloom’s (revised) taxonomy of learning:

1. Students acquire basic factual and conceptual knowledge of mise-en-scène through reading an assigned textbook chapter. If needed, they consult with the peer tutor who has taken the class before and helps students with specific reading comprehension problems.
2. They then retrieve and check their memory and understanding by taking an online, open book, low-stakes, multiple-choice quiz that provides immediate feedback. If necessary, they can retake the quiz once.
3. They watch one of the films used as an example in the textbook to illustrate the elements of mise-en-scène: Spike Lee’s Do The Right Thing.
4. In the online forum, due a few days later (but still before they come to class in person), students interpret and discuss the mise-en-scène of this particular film, applying basic knowledge. The online discussion posts are graded by the teaching assistant, with online rubrics.

5. Then, the next day in the face-to-face class meeting, students work in groups to analyze evidence from the film (again, with a focus on aspects of mise-en-scène) to support a thesis that the instructor has provided for them at the beginning of the face-to-face meeting.

6. At the end of class, the groups organize their findings and present the thesis and their evidence to the whole class for feedback and questions.

7. On the midterm exam, giving evidence for a thesis is one of the skills assessed, with formative feedback.

8. In the analysis essay, students demonstrate their skill of giving evidence for a thesis: they are asked to transfer their knowledge to an analysis and evaluation of another film.

9. They receive more formative feedback, through critiquing each other’s essays (peer review) and individual tutoring with the teaching assistant, and revise their essay.

10. They create their final version of the essay and receive summative feedback from the instructor.

The blended and flipped design of the course allows more time for and focus on the higher learning tasks (5 - 10) than a course designed around lectures and discussion. Here, the basic content comprehension and application (1 - 4) is done online and requires relatively little intervention from the instructor. A peer tutor (focus on reading) and teaching assistant (focus on writing) help facilitate and assess at the lower stages. As the level of learning and stakes increases so does the level of face-to-face interaction of the instructors with students.

In summary, technology and the CMS BlackBoard Learn are used as a strategic tool to facilitate student learning. Online class activities take the place of traditional content lectures and ensure students’ acquisition of knowledge. Assessment of basic levels of student learning also takes place online. Face-to-face activities (in a whole-class setting) focus on modeling and practice of critical film analysis, analysis of sample essays, student (group) presentations of group projects, and discussion/feedback. Individual or small group meetings take place face-to-face with the following goals: Instructor intervention to ensure student success, student consultations with instructor about writing projects, development of thesis statements for critical essay writing assignment, and discussions and organization of creative group projects, such as making short videos and guest presentations in other classes.

ASSESSMENT

1. Research Design

The course redesign included a rigorous assessment plan. The redesigned course was implemented over three semesters: fall 2012, spring 2013, and fall 2013. After each semester, data were analyzed, feedback was collected from the instructors, and revisions were made to the course. This implementation schedule allowed for a phased growth in class capacities: from 35 to 50 to 70 students on average in each section (with some variation due to classroom availability). As enrollment grew, more sections were offered. As a result, more freshmen and sophomores were able to enroll in the course—since they enroll later and over the summer—while seniors and juniors have
early spring enrollment appointments and used to take most available seats in the only offered course section.

Each semester after the redesign, the teaching assistants evaluated the signature essays with the use of standard rubrics, for assessment purposes (whereas the instructor evaluated the same essays with the same rubrics in a separate step, for grading purposes). This allowed the course designers to standardize evaluation. To control for variation, the course coordinator held a training workshop with all teaching assistants on how to use the rubrics to guarantee consistency. As stated above, this signature assignment represents the culminating task of the course and measures students’ ability to write effectively and integrate complex analyses into one assignment. As such it serves as the best indicator of student learning in a writing-focused Liberal Studies class in the humanities.

Data from these redesigned sections were compared to a control group: the pre-redesign section of this class taught in the fall of 2011, where the same signature essay assignment was given and the same assessment rubrics were used. The teaching assistants (of the fall 2012 redesigned course) were asked to re-evaluate all signature essays from the fall 2011 section with the same assessment rubrics, to establish the control group. Though the course had been offered in other past semesters (fall 09, fall 10, spring 12), these sections were not standardized—they used a variety of assignments, no assessment rubrics, and did not require electronic submission of the final papers. No means of comparing these sections with the redesigned course was available.

In addition to this assessment of student learning, official institutional data on course grades and DFW rates, as well as qualitative data from surveys and reflective essays were collected to assess the success of the course redesign. To control for variation in overall instructor grading across sections, each blended section (which varied by instructor and time of day) was compared to the Fall 2011 lecture course separately.

2. Methodology

Basic t-tests for statistical significance of independent samples were run to compare the Fall 2011 section with each blended section on the following outcomes: average course grade excluding those students that received a ‘W’ (withdrawal), average freshman course grade, average junior/senior course grade, and average scores on the signature assignment. Except for the signature assignment, data for the analysis were extracted from the NAU data warehouse Enterprise reporting, and all analyses were run in SPSS software.

3. Findings

Overall enrollment increased exponentially. In the unblended version enrollments had been steady around 35 per section. Since the blended redesign, enrollments have grown to 347 students in fall 2013, in 5 sections of 70+ students each. As more sections were opened, and thus available to freshmen and sophomores, the percentage of lower division students increased.

Overall, as Table 1 shows, scores on the signature assignment remained consistent or improved compared to the fall 2011 control section of the course. In both fall 2012, spring 2013, and fall 2013, scores on the signature assignment improved compared to the fall 2011 group in all sections of instructor #1. For the second course instructor, scores remained consistent with the fall 2011 section (taught by instructor #1) in fall 2012 and fall 2013, but declined in spring 2013. In fall 2013, a third instructor was added due to increased enrollment, and scores for this instructor also remained consistent with the fall 2011 section.

This shows that, despite reduced face-to-face classroom time, students are still able to accomplish the primary course learning objectives of demonstrating proficiency in writing critical film essays by producing an original interpretative analysis of a film in its historical context of production. The improved essay scores in instructor #1’s
sections further demonstrate that careful planning and scaffolding of assignments in blended courses can even improve student learning. This is likely due to increased time for meaningful interaction between faculty and students during f2f class meetings with regard to higher learning tasks such as analysis, evaluation and creation, rather than focusing on lower learning tasks such as content understanding and application.

While signature assignment scores showed improvement or consistence, overall course grades in blended sections revealed greater variation when compared to the fall 2011 control section. As Table 2 shows, average course grades for blended sections of the course, from fall 2012 and spring 2013, were statistically consistent with the fall 2011 lecture section. This was true for all instructors and sections. Average course grades for blended sections in fall 2013 were statistically lower than the fall 2011 lecture section. This was true for all but one section of the course in fall 2013. When all blended sections were considered together, average course grade in blended versions of the course were statistically lower than the fall 2011 lecture section. When average course grades for juniors/seniors were considered separately, no statistical difference was found between grades in the fall 2011 lecture and blended sections. Because the fall 2011 control section included only three freshmen, no conclusions can be drawn regarding the effect of the blended format on this student group.

We interpret this decline in average course grades in the fall 2013 sections to the interaction of both large class size and high freshman enrollment. While neither high freshman enrollment nor a large class size alone produces a steep decline in course grades (or assessment of student learning as evidenced by the assessment data), the combination of the two tips overall grades below those of the fall 2011 control section—which had neither high freshman enrollment nor high overall enrollment. Figure 1 relates class size to average course grade and average freshman grades. Overall average course grade and freshman average course grade both decline slightly as class size increases. DFW rates show a parallel relationship to class size—rising as class size increases. Figure 2 relates freshman enrollment rate to average course grade. Again, both overall average course grade and freshman average course grade decline slightly as freshman enrollment increases. DFW rates show a parallel relationship to freshman enrollment—rising as freshman enrollment increases.

Table 1. Assessment scores, Fall 2011 lecture compared to blended sections

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Fall 2011</th>
<th>Fall 2012</th>
<th>Spring 2013</th>
<th>Fall 2013</th>
<th>All Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Num. Responses</td>
<td>34</td>
<td>78</td>
<td>66</td>
<td>50</td>
<td>85</td>
</tr>
<tr>
<td>Average Assessment Score</td>
<td>8.9</td>
<td>9.6***</td>
<td>8.9</td>
<td>9.5***</td>
<td>7.3***</td>
</tr>
<tr>
<td>Statistical Comparison, Fall 2011 to Each Blended Section</td>
<td>Base Improvement Same Improvement Decline Improvement Same Same Same</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Indicates statistical significance at the .001 level.
### Table 2. Average course grades, Fall 2011 lecture compared to blended sections

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Fall 2011</th>
<th>Fall 2012</th>
<th>Spring 2013</th>
<th>Fall 2013</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>1</th>
<th>2</th>
<th>3</th>
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</thead>
<tbody>
<tr>
<td>Section</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Enrollment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshman 10.3%</td>
<td>39.5%</td>
<td>52.8%</td>
<td>13.5%</td>
<td>57.6%</td>
<td>11%</td>
<td>43%</td>
<td>44%</td>
<td>17%</td>
<td>34%</td>
<td>75%</td>
<td>63%</td>
<td>46%</td>
<td>68%</td>
</tr>
<tr>
<td>DF rate</td>
<td>7%</td>
<td>2.6%</td>
<td>8.3%</td>
<td>5.4%</td>
<td>9.1%</td>
<td>9.3%</td>
<td>12.9%</td>
<td>11%</td>
<td>8.5%</td>
<td>7.8%</td>
<td>8.3%</td>
<td>20.6%</td>
<td>20.6%</td>
</tr>
<tr>
<td>DFW rate</td>
<td>7%</td>
<td>2.6%</td>
<td>11%</td>
<td>5.4%</td>
<td>12%</td>
<td>17%</td>
<td>17%</td>
<td>25%</td>
<td>14.1%</td>
<td>18.8%</td>
<td>28%</td>
<td>23.5%</td>
<td>23.5%</td>
</tr>
<tr>
<td>Average Course Grade</td>
<td>3.4</td>
<td>3.2</td>
<td>3.0</td>
<td>3.3</td>
<td>3.0</td>
<td>2.9</td>
<td>2.9</td>
<td>2.9</td>
<td>3.1</td>
<td>2.9*</td>
<td>2.8*</td>
<td>2.8*</td>
<td>2.4***</td>
</tr>
<tr>
<td>Average Freshman Grade</td>
<td>3.0</td>
<td>3.2</td>
<td>2.6</td>
<td>3.4</td>
<td>2.8</td>
<td>2.2</td>
<td>3.1</td>
<td>3.0</td>
<td>3.0</td>
<td>2.4</td>
<td>2.6</td>
<td>2.6</td>
<td>1.8</td>
</tr>
<tr>
<td>Statistical Comparison of Average Course Grade, Fall 2011 to Each Blended Section</td>
<td>Base</td>
<td>Same</td>
<td>Same</td>
<td>Same</td>
<td>Same</td>
<td>Same</td>
<td>Same</td>
<td>Same</td>
<td>Same</td>
<td>Decline</td>
<td>Decline</td>
<td>Decline</td>
<td>Decline</td>
</tr>
</tbody>
</table>

1Assessment Scores for these terms could not be separated by section. Number of assessment scores available may vary from actual course enrollments listed in Table 1.

2Excludes grades of W.

 Indicates statistical significance at the .05 level. *** Indicates statistical significance at the .001 level.
This suggests that both class size and number of students in the class have a negative effect on grades for students of all class levels.

Factors we could not control for include: 1. Honors sections were taught concurrently with instructor #1’s section 1 in fall 2012 and spring 2013 but no longer in fall 2013. Honors students received consistently high grades and had 0% DFW rates. As their number decreased, the overall average grade and DFW rates were affected. 2. Instructor #3 in fall 2013 had not previously taught at the college-level or with Blackboard Learn CMS. The high DFW rate in this section is most likely due to a lack of consistency and technical expertise common of new instructors, despite intensive mentoring by the course coordinator.

One of the design features of the course is learner self-reflection. Three multiple-choice
surveys and a reflective essay are systematically built into the course and ask students to express and explain their expectations, preparation, performance, perceptions, and challenges with regard to the blended course. While an in-depth, systematic analysis of the data (1000+ survey responses) and written material (500+ essays) is beyond the scope of this article, some recurring comments speak directly to the blended course design. Students

- Like the flexibility of the blended format for their scheduling of classes, work, and personal time.
- Find the rigor challenging but see value in sticking to set due dates and frequent, low stakes assignments, which “made it feel like a real job”.
- Experience frequent, short writing for the first time and see value in it for building up to the longer film analysis essay.
- Have taken online classes before and thus know the CMS well (sophomores and up) or can learn to use it quickly (freshmen).
- Appreciate being able to access class materials online and watch the assigned films multiple times, especially those with subtitles, while having personal access to each other and to the instructor in group and class meetings.
- Do generally not enjoy working in groups but experience the many collaborative tasks in this class as positive; they especially like the online group discussions and group project with the local film festival.
- Realize that preparing for class (online) helps them get more out of class (f2f).

WHY BLEND IN THE HUMANITIES?

Often reservations about the use of technology in (online and blended) humanities classes are voiced in terms of discipline-specific concerns about student learning and preferences. (Restad, 2013, Freeman, 2013) It is feared that students do not like online or blended classes and that offering them will drive students away from our programs. However, a recent large-scale “Study of Undergraduate Students and Information Technology” showed that students prefer blended courses over purely face-to-face or purely online courses (ECAR). Other claims made by opponents of online or blended learning include assertions that only face-to-face education can lead to paradigm-shift thinking and mental changes while online/blended education leads only to accumulation of skills and information. Also, face-to-face teaching is seen as the only way of engaging students socially, responsibly and spontaneously. It is hard to argue with these claims without establishing reliable ways of assessing student learning in all modalities. Yet humanities faculty are often the first to argue that such assessment is impossible and should not even be attempted, while maintaining that they know how and where learning happens.

In addition, how is the blended design of a humanities course justified, in terms of the humanities? First, blended learning is a paradigm shift in that it attempts to empower students and lead to creative projects that are based on solid knowledge of the discipline’s core works (of literature, art, music, etc.), methods, disciplinary ways of thinking, and values. It starts with students’ needs, objectives, and aspirations and emphasizes their learning. It does not privilege the instructor as the authority on knowledge in the classroom (Bransford, Brown, Cocking, 2000). It rather makes use of the instructor’s training and experience for the purpose of selecting and providing content from a variety of sources and applying best practices to content delivery and processing that lead to higher student learning. Second, technology is both a means and a goal in this context. As students learn to use technology to retrieve, process, and create disciplinary content they reflect on the transformative changes brought on by it (Sands, 2010). In the field of Digital Humanities new
technological tools and methods are applied to the work in traditional humanities and publically discussed in blogs (Frost Davis, 2013) and the forums of the Humanities, Arts, Sciences, and Technology Alliance and Collaboratory (HASTAC), at the Institute for Advanced Technology in the Humanities (IATH), the Maryland Institute for Technology in the Humanities (MITH), and funded by grants from the National Endowment for the Humanities, Office of Digital Humanities (NEH ODH) and the National Institute for Technology in Liberal Education (NITLE). Students benefit from critical reflection about these tools, both for career preparation and discipline-specific understanding (Parry, 2014). Meaningful exchanges of ideas mediated by technology are not inferior to social interaction and presence in the classroom, but different. Technology empowers different students and engages a generation of digital natives by using technology as a tool and to reflect on its values (Prensky, 2001).

Furthermore, blended learning integrates the content of the traditional humanities with the digital literacy needed by humanities graduates to succeed in their chosen professions. For example, one of the basic principles of blended course design is to engage a wide spectrum of students (Picciano, 2009) with technology in an active way (Prince, 2004). In the course described in this chapter, students learn about and reflect on the conditions of film distribution and exhibition in the United States, in module one of the course. They transfer that knowledge onto a group project that grows out of their mini internship with a film festival. They are asked to demonstrate rather than recount their grasp of the conditions of film exhibition and marketing. The goal of this active, collaborative, practical project is in line with the larger learning outcomes of the humanities: to guide students to a creative level of learning—beyond consumption and mere appreciation of cultural products. They also engage with the local community and apply knowledge to actual professional activities. The blended format of the course allows for time to do this internship, and the student projects presented during the last three semesters have all included online components (web pages, Facebook Pages, Twitter, Instagram, Pinterest, Tumblr).

How does the blended design of a humanities course benefit instructors? Technology is seen by many not as supplementing and enriching but as imposed by the administration, as driven by the corporate model of education, and as a way of disempowering tenured faculty “teachers” and ultimately replacing them with mere “mentors” of student learning. One of the goals of the President’s Technology Initiative at Northern Arizona University had been to “conserve faculty effort.” While well-intentioned in light of recent increases in teaching load (during the budget crisis) and promising to free up time for research and scholarship, this goal was perceived as yet another way to entice faculty to replace themselves—this time in terms of their presence in the classroom. Faculty who did participate in the initiative were scrutinized by colleagues in terms of their more flexible schedule—a perspective rooted in the notion that in-class seat time is more involved than time spent interacting with students online.

However, not only does the initial blended redesign require time for training and implementation/revision but the actual course delivery in a blended format requires as much time grading weekly assignments (despite the TA support), providing frequent formative feedback, and managing group tasks as a traditional lecture class requires for delivery of content and leading a full-class discussion. In addition, the initial learning curve is steep, as instructors have to learn to use the CMS effectively and rethink their role in the flipped classroom. Both require mentoring and support from the course coordinator on an ongoing basis. The increased flexibility, just like for students, is seen as an advantage by those involved in the teaching of blended courses. Highly experienced, trained, and full-time faculty leaders will always be needed to design, implement, coordinate, and assess blended courses.
CONCLUSION

Blended design of humanities courses opens up opportunities for embattled humanities programs to stay viable, current, and aligned with institutional priorities. They can serve as models for other programs on campus, provide valuable professional experience for students, and invigorate faculty teaching by incorporating active pedagogy and principles of student success. Most of all, blended design can help increase student learning, as our data have shown, a goal that any course design has to live up to.

REFERENCES


KEY TERMS AND DEFINITIONS

Blended: The design principles and pedagogy underlying hybrid courses that combine face-to-face (f2f) and online class time.

Course Coordination: A way to organize multi-section courses so that student learning outcomes, materials, assignments, and rubrics are aligned. Allows for mentoring of new instructors and ensures consistency and predictability for students taking the same course in different semesters or from different instructors.

DFW Rate: Percentage of students whose recorded grades are D, F, or W (=Withdrawn after the deadline). Students do not get credit towards Liberal Studies or major requirements with these grades. Thus, this rate is used to assess student success: the higher the rate, the lower the success.

Digital Humanities: Newest field of the humanities that applies technology to the study of cultural products and also examines this use as a cultural product itself.

Engagement: Active, critical, and self-motivated work mode of students.

Flipped: The inversion of time spent by students in class and online on knowledge acquisition and higher learning activities such as analysis and creation.

Grade Performance Status (GPS): An online monitoring system used at Northern Arizona University to track student performance. It allows instructors to enter grades, messages, and automated notifications. Students, advisors, and academic support staff can access this information and act accordingly.

Master Syllabus: As part of a coordinated course it allows for consistency and reduces time for instructors to design a new course every time it is taught.

Scaffold: As principle of backward course design to align student learning outcomes, assignments, and tasks. Often represented in a diagram, resembling a construction scaffold.
Chapter 10
Using Instructional Design Goals to Appropriately Classify Instructional Design Models

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ABSTRACT
This chapter probes an assertion by Gustafson and Branch (2007) that it is easier to classify instructional models when guided by the needs that call for them. If this is so, identifying appropriate instructional design models for various instructional situations can be greatly simplified. Gustafson and Branch (1997) note that each of the numerous instructional models targets one or more of three types of instructional situations: the Classroom, Product, and Systems situations. In evaluating the assertion, the chapter examines pertinent questions that look at some assumptions guiding the choice of instructional models, the three design situations identified, and some characteristics that separate the various design instances. In the end, it becomes obvious that the instructional design professional will do a better job of classifying instructional models based on a thorough understanding of instructional situations and guided by characteristics of the situation.

INTRODUCTION
This chapter investigates a statement made by Gustafson and Branch (2007) in their discussions of the ADDIE (Analyze, Design, Develop, Implement, and Evaluate) instructional design model, which notes that instructional “models may be classified according to the primary type of instruction they are designed to produce” (p. 15). This statement is probed in light of its correspondence or lack thereof to the design of instructions. The outcome of this probe holds implications for both students and instructional design and technology professionals. The fact that different models of instructional design can be classified in accordance with the primary type of instruction they produce holds real significance for both students and instructional design and technology professionals (Cronje, 2013). In building their argument for this statement, Gustafson and Branch (1997) examine different instructional design models under three types of instructional design situations, namely

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the classroom, the product, and the systems. This chapter looks at the pertinent questions whose answers can lead us through this discussion and culminate in a conclusion that is relevant to the thesis of Gustafson and Branch (1997). This chapter will also examine assumptions and characteristics that set apart the different instructional situations: namely classroom, product, and systems. The discussion of the assumptions and characteristics leads to the examination of some design models identified by Gustafson and Branch (1997) as fitting examples for the classroom, product, and systems situations respectively.

ASSUMPTIONS UNDERLYING THE CHOICE OF INSTRUCTIONAL DESIGN MODELS

The statement by Gustafson and Branch (2007) that, instructional design models “may be classified according to the primary type of instruction they are designed to produce” (p. 15) should be of interest to both students and practitioners of instructional design alike. This statement’s accuracy or lack thereof holds implications for the work instructional designers produce, if they are to create designs that meet the needs of design situations or provide solutions to the problems that necessitate these decisions in the first place (Zierer & Seel, 2012). Before designing an instructional plan, an instructional designer must answer these questions:

1. What assumptions underlie the choice of an instructional design model?
2. What are the principal instructional design situations?
3. What are some outstanding characteristics that distinguish the different design situations from each other?

In response to the first question, Gustafson and Branch (1997) identify a number of assumptions they believe can help set the stage for several instructional design decisions. The most prominent of these assumptions is that the choice of an instructional design model must be preceded by the designation of an instructional design situation. In other words, prior to choosing an instructional design model, an instructional designer must first determine whether he is designing for a classroom situation, a product situation, or a systems situation. Otherwise, the designer runs the risk of choosing the wrong design model, which is likely to end in failure. To properly designate a situation, a number of conditions must be satisfied (Gustafson & Branch, 1997). Gustafson and Branch believe that the classroom design situation designation rests on the following assumptions:

1. That the impending design will be used in an educational setting and in some cases, in business and industry situations that utilize classroom instruction.
2. That there is a specified number of times the class will meet face-to-face or in other synchronized formats, with the length of each class meeting having been predetermined prior to laying the blueprint of the design or laid during its course.
3. That there will be a teacher or another subject-matter expert (SME) who will play a key role in deciding the course content, the planning strategies, and the ways needed resources will be selected for use in delivering the design, as well as the choice of technology through which the designed instruction will be transmitted.
4. That an instruction exists only as a guide to the teacher or facilitator. In this case, the designed instruction is envisioned to emphasize structure over detail; hence it need
not be elaborate. The type of learning that emanates from this kind of design is highly inconsistent, as it depends largely on mood and depth of knowledge or experience of the personality delivering or facilitating the designed instruction.

For a Product design situation, Gustafson and Branch (1997) identify assumptions to include the belief:

1. That the designed instruction resulting from this process will be used for several hours or days in the course of the instructional cycle.
2. That the instruction designers will have little to no contact whatsoever with the users of the instruction, unless they are the people charged with facilitating it.
3. That a front-end analysis will be conducted to outline the need for the instructional product.
4. That there will be extensive tryouts and revisions of the instructional product before it is deployed to the final users.
5. That something new will be produced - that the finished instruction is not simply a collection of items and resources selected from a designer’s archives.
6. That the resultant instructional product will be usable by a variety of users without the designers’ assistance.

In identifying a Systems design situation, Gustafson and Branch (1997) make assumptions that include the belief:

1. That an entire curriculum is being designed.
2. That substantial resource will be available to make possible the development of an instructional plan suitable for an entire system.
3. That the design team tasked with developing this product is highly trained so as to appreciate the intricacies of designing instruction for an entire system.
4. That instructional material developed for use will be mostly original, or selected from existing archives in a few cases, and where appropriate.
5. That there is a high front-end analysis of needs and users, as well as extensive revision of the design in order to ensure that it can deliver on the needs for which it is being produced.

USING CHARACTERISTICS TO CLASSIFY INSTRUCTIONAL DESIGN MODELS

Having laid out the assumptions that could guide instructional designers to properly designate instructional situations, we can now turn our attention to characteristics that can help us avoid confusing the different design situations. In doing this, some of the assumptions described above may come in handy. In the table below, an attempt is made to rationally explain the classification of instructional models into Classroom, Product and Systems based on some select characteristics of the different situations.

As a matter of fact, the field of instructional design has as many instructional design models as it has writers. However, it is important to note that not every design model can be used for just any instructional design project, because different instructional situations call for different instructional and design models and approaches. Since most instructional design models are built around the ADDIE principles; their real differences lie
in how the different models arrange the ADDIE principles in their design structures (Gagne, Wager, Golas, & Keller, 2004; Gagne, Wager, Golas, Keller, & Russell, 2005; Reinbold & Cuddy, 2012). In discussing the differences between models, we look principally at their various characteristics, which come in many forms.

Differences in design models may arise from a number of factors. These may include the personal characteristics of the personnel putting together the design; its workforce requirements; the resources needed; the situation in which it will be utilized; and the post-production relationship between the designer and the product's implementation (Hanke, Ifenthaler, & Seel, 2011). To enable us put things into perspective, a selected number of characteristics that can help us rightly classify instructional design models are presented in Table 1.

From the layout presented in the table above, it is evident that one principal differentiating characteristic that can help in the classification of instructional design models is the amount of

Table 1. Classifying instructional design models

<table>
<thead>
<tr>
<th>Selected Characteristics</th>
<th>Classroom Model</th>
<th>Product Model</th>
<th>Systems Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical output</td>
<td>One or a few hours of instruction</td>
<td>Self-instructional or instructor-delivered package</td>
<td>Course or entire curriculum</td>
</tr>
<tr>
<td>Resources committed to development</td>
<td>Very low</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Team or individual effort</td>
<td>Individual</td>
<td>Usually team</td>
<td>Team</td>
</tr>
<tr>
<td>Instructional design skills/experience</td>
<td>Low</td>
<td>High</td>
<td>High/Very high</td>
</tr>
<tr>
<td>Emphasis on development or selection</td>
<td>Select</td>
<td>Develop</td>
<td>Develop</td>
</tr>
<tr>
<td>Amount of front-end analysis/needs assessment</td>
<td>Low</td>
<td>Low to medium</td>
<td>Very high</td>
</tr>
<tr>
<td>Technology complexity of delivery media</td>
<td>Low</td>
<td>Medium to high</td>
<td>Medium to high</td>
</tr>
<tr>
<td>Amount of tryout and revision</td>
<td>Low to medium</td>
<td>Very high</td>
<td>Medium to high</td>
</tr>
<tr>
<td>Amount of distribution/dissemination</td>
<td>None</td>
<td>High</td>
<td>Medium to high</td>
</tr>
</tbody>
</table>

Gustafson and Branch (1997)
time for which an instruction will be used. For the classroom model, an instruction may be used for a minimum time of less than an hour to a maximum of about four hours, as in the case of some college classes. However, instruction designed for product situations is usually self-instructional--or instructor-delivered in a few cases--and could last from several hours a day to several weeks or even months. On the other hand, instruction designed for systems situations is usually used across a wider spectrum of cases or situations that constitute the system.

Another prominent characteristic separating the various design situations is the amount of resources committed to developing the design. When designing for classrooms, the resources committed are quite low, because often the designers are the instructors as well. Moreover, since the main purpose of the design is to provide guidance on what to teach and the steps needed for the designer/instructor to accomplish this, only a handful of resources are committed to the development of the instruction. This is because the lesson or course might be used only once in a school week, term, or year. In contrast to this, a significant amount of resources are needed for designing instruction for both product and systems situations. For a product situation, the level of resources needed is usually high, because unlike in the classroom design situation, the instructional designers and implementers are most likely not the same people. In most product situations, a significant amount of resources is usually needed in the design process to ensure that the design gives learners optimal control of the instructional product. The higher amount of resources invested can also help ensure that the product can easily be operated by instructors who are not part of the design team. Similarly, a higher amount of resources is needed to design for a systems situation. This is due primarily to the complexity of the systems environment and the range of users involved.

In response to the human resources needed to design for the various design situations, a classroom design situation requires nothing more than an individual effort, especially when the teacher is also the designer. At most, the classroom situation may use two people — for example, where the teacher has to work with an instructional designer. In such cases, the teacher is usually the subject-matter expert (SME) while the designer serves as a technical resource person. In product situations, human resource needs usually range from one to several people depending on the complexity of the product being designed. In contrast with these two situations, human resource requirements are always high in systems situations, because a systems design is naturally complex, owing to the scope the design is expected to cover. In addition, the complexity of designing for systems may arise from the fact that end-users may be very diverse.

As far as the expertise needed to develop respective designs, requirements for classroom design are relatively low, since they are mostly used to guide teachers in the delivery of their lessons. In such cases, the expertise needed is no more than that necessary to meet the teacher’s lesson objectives. The limited expertise for designing for classroom situations is compensated for by the assumption that the teacher is a subject-matter expert, and so has the knowledge and depth required to navigate every step of the instructional delivery process. It is also compensated for by the assumption that the teacher or a supposed subject-matter expert will be present to ensure that learners are working assiduously towards achieving the learning objectives. However, the same cannot be said of product and systems situations. In the product situation, the expertise needed is relatively high. This is because the designer might not be available to explain aspects of the design either while the product is being used or at some other time, as it is in the case of the teacher/designer in the classroom situation.
Product designers must have the ability to anticipate the expectations and challenges of end-users and to come up with detailed and comprehensive strategies to meet these expectations and challenges ahead of deploying the product. These end-user anticipations may be reinforced through extensive testing in a series of piloting and revision sessions. In the case of the systems situation, a range of high-to-very-high expertise is required to design functional and efficient instructions. For starters, a significant amount of expertise is required to undertake a front-end analysis of the system and its needs and to evolve strategies for evaluating the design once it becomes operational. Extensive expertise is also essential in dealing with all the varied components that make up the system to ensure the production of a fitting instructional design. Again, in the classroom situation it is preferable to select and use material resources that have been developed by others and can be acquired for free or at a reasonable cost because, as indicated earlier, instructional designs developed for classroom use are usually used for just one class session or possibly a few classes within a school term or year. Why waste valuable time and resources developing plans for use for just once or at most for only a few times, when there are free materials out there that could easily be acquired and used?

By contrast, it is highly recommended that essential material be developed, not borrowed, for both product and systems situations. In product situations, the material is likely to be in use for a much longer time or to be used by many more people in one or more locations. In a similar manner, in the systems situation resources are designated for use system-wide, possibly by a wide range of groups spanning a larger geographic space. In classroom situations it is advisable to select rather than develop course material because the range of use is narrow. This means there is little chance of crossing copyright lines and getting into trouble. However, this is not the case with systems and product situations, which are likely to be distributed over a wider range of geographical space and to individuals and groups the designers may know little or nothing about (Gustafson & Branch, 1997).

Furthermore, in the classroom approach, the amount of needs assessment required is quite low, since the design targets a specific grade or class or at most, a course. In most classroom situations, the number of learners involved is small, and usually the teacher/designer is already familiar with the learners, whose needs he also likely knows. This reduces the need to conduct a full-scale front-end analysis. However, in the case of systems, designers have to grapple with a broad array of users who might not all reside in the same geographical location. In addition to this, designers may have little knowledge of the needs of their clientele who will come into the design situation. This underscores the need to go out there to assess the needs of the users for whom they will be designing the instruction. This helps them to determine how best they can make their designs effective and efficient for such users. There is a minimum-to-high need for front-end analysis in designing the product, depending on its reach and complexity. In developing less-complex products, a low-to-minimum needs assessment may be required as opposed to designing a more complex product which may have a higher reach or usage. The level of needs assessment that may be required for any of these design situations is further guided by the kind of problem the designed instruction is conceived to respond to.

The complexity of the media through which designed instruction is proposed to be delivered is another characteristic identified by Gustafson and Branch (1997) as differentiating the various design classifications. Media complexity tends to be low in the classroom situation, because the teacher may also be the designer. This makes a lot of difference in the choice of technology-based media for instructional delivery. In most classroom situations, the complexity of technology needed to transmit instruction is lower compared with what
is required for the product and systems situations. In the classroom situation, the presence of the teacher in the classroom limits the amount and complexity of the technology needed, because the teacher, who may double as the designer or may have worked with the designer as an SME to design the instruction, is able to provide verbal instruction or explain matters that may not be quite clear to learners.

However in the case of product, where the designers may not be the same people to implement or facilitate the product, the designed instruction has to be such that the absence of the designers does not affect the use of the product. To guarantee this, additional technological complexities need to be infused into the design to make it easier to use and to provide the guidance that would have been given by a teacher/designer as in a classroom situation. In the case of systems, a medium-to-high level of technological complexity is required for transmitting instruction. This is because designers are most likely not the implementers, even though the implementers would most likely have been trained on the design’s substance and implementation, offsetting part of the complexity of the technology that would otherwise be required as in product situations.

In the view of Gustafson and Branch (1997), the number of tryouts and revisions needed for classroom situations ranges from low to medium. This usually depends on the subject being taught; the length of time needed to teach it; or the frequency with which the design is expected to be used. For designs intended for short-term use, a lower number of tryouts and revisions may be required to ensure that the design can deliver on its intended purpose. For those likely be used over a period of time, a medium number of tryouts and revisions may be required to improve the reliability of the design over time. This is further necessary to improve the quality of the design’s output over a period of time or to test the robustness of the design or its ability to deliver as new variables are introduced into its operating environment. For product situations, there is an absolute need for a higher number of tryouts and revisions; because users of the product may not have the benefit of the designers’ presence to explain things to them during the implementation stage, though the design would still be expected to deliver on the goals set for it. In such situations, designers are expected to try out the product with either the target group or with as many pilot groups as possible. These pilot groups should have characteristics as similar to those of the target users as possible.

From these product trials, designers will collect as much relevant feedback as possible to be used to revise the product until the designers and their clients are satisfied with the efficacy of the product. In the case of systems, a minimum-to-high number of tryouts and revisions may be needed to compensate for the probable absence of the designers at the implementation stage. The number of user groups in the system may also necessitate a medium-to-high number of tryouts and revisions. In such situations, designers need to ensure that a design is useful across the board, either in its finished state or with some specific or custom changes to suit users in various units across the system. This can be ascertained only when the design is fairly piloted among representative segments of all the various groups who make up the system to ensure that subsequent revisions capture all the variety brought to the system by the target users.

Last, design models can be classified into any of the above classifications based on the expected range of distribution or dissemination of the design. Instruction designed for classrooms usually has no distribution at all, because it is developed by teachers working by themselves or with instructional designers to produce plans matching the way the teacher wishes to transmit whatever he wishes his students to learn. For this reason, classroom designs are not very elaborate and may pose implementation difficulties for those unfamiliar with the original designer’s intent. This is, however, not the case with product
designs, which are principally designed to be used independently of the designers. Distribution of product designs may be as widespread as the client chooses. In most instances, products are designed for corporate clients who implement it with their workers or clientele, who may utilize the product from varied geographic locations. With systems designs, the distribution range is usually from medium to high, depending on the size of the system and on the number and locations of learners within the system.

In the view of Gustafson and Branch (1997), a basic instructional design model needs to be built on a basic framework such as ADDIE. They postulate that a sound instructional design model must consist of four major activities or must have the ability to perform four main functions. These are the ability to Analyze a learning environment, including the needs of the learner; the ability to set out Design specifications that have the potential of yielding an effective, efficient, and relevant learner environment; the ability to Develop and manage all the required learning material; and finally an ability to Evaluate outcomes of the design through either a formative or summative approach, or preferably one that uses both, before or after the design is implemented.

In line with instructional design competencies discussed by Davidson-Shivers and Rasmussen (2007), an instructional designer should be well placed to identify appropriate conditions under which respective instructional design models can be applied. The designer is able to do this by recognizing the respective assumptions that underlie the various design models (Hilgart, Ritterband, Thorndike, & Kinzie, 2012). A helpful approach to this basic understanding begins by grasping a range of instructional design taxonomies, in particular three categories of instructional design situations that reveal which design model is best suited for use in designing one of the following: a classroom instruction plan, a product for implementation by users other than those who designed it, or a large and intricate instructional system that targets the needs of an organization.

At this point, it is appropriate to consider one example each of these design models: the classroom, the product, and the systems situations respectively. This helps us put some of the characteristics discussed earlier into perspective. For the classroom situation the Gerlach and Ely (1980) model will be discussed; for the product situation we will discuss the Van Patten (1989) model; and last we will discuss Dick and Carey (1978) model as an example for the systems situation.

THE GERLACH AND ELY DESIGN MODEL

The Gerlach and Ely instructional design model stresses the cyclic nature of instructional design when designing for a Classroom, as well as the concomitancy of some of the primary operations (Gerlach & Ely, 1980). In setting out the core areas of this design model, Gerlach and Ely (1980) assume that teachers and other people involved with designing instructions for classroom are content-oriented. The authors believe that designers who design for classroom situations think first and foremost about the content before any other aspect of the design. Based on such assumptions, it is suggested that learning objectives be the first design task to be tackled by designers willing to use this model, before they take any other design decision.

After crafting the learning objectives, the next important task should be an assessment of the needs of the learners (Gustafson & Branch, 1997). In accordance with the prescription of the Gerlach and Ely model, five activities follow the completion of assessment of learners’ needs as laid out in Figure 1. These activities include determining the appropriate strategies to be used in the design;
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Figure 1. Gerlach and Ely model of instructional design

deciding how groups will be organized for the purpose of implementing the design; determining the amount of time to be allocated for each strategy and the activity to be used; choosing the amount of space needed to implement the design; selecting the kinds of resources needed for the successful execution of the design; and last, picking the best way to measure the effectiveness of the design in the light of its content and structure.

In respect of the Gerlach and Ely design model, appropriate strategies deal with the continuum from exposition; where learners are provided with cues designed to help them succeed in the learning process, on through to discovery (constructivism); where few or no cues are provided to aid the learners in the learning process. In this design model, the decision regarding which point on the continuum should be selected as a starting point is largely guided by the topic on which the design is based; the objectives identified at the start of the design process; or the familiarity of the designer with the strengths and weaknesses of prospective learners (Morrison, Ross, & Kemp, 2010; Mattiske, 2012). After defining the amount of guidance learners should be given through the design, the next consideration of the designer is how groups will be organized or re-organized per the design’s dictates for the purpose of its implementation. This activity should also be seen as a continuum that stretches from situations where learners will engage in self-study, working by themselves as individuals, to where they engage in whole-class activities. The choice of a grouping strategy depends largely on other strategies selected by the teacher. It could also be affected by the amount of time and space available for the effective implementation of the design model and the kinds and amount of resources available to aid design implementation (Morrison, Ross, & Kemp, 2010; Gibbons, 2012). Though time is relevant as a factor that determines how learners are grouped for the purpose of learning, its allocation depends on the overall amount of time available for executing the entire design content. This is because each individual design unit can benefit only from a corresponding unit of time allocated from the total share of time assigned for implementing the entire design.

Similarly, the Gerlach and Ely model calls for the allocation of space for the various units of the design. Gerlach and Ely (1980) view this activity as a fluid undertaking that cannot be crystalized,
since designers always have the opportunity of extending learning experiences beyond traditional classroom spaces, (which are always limited), to spaces outside of the classroom. Another way designers using this instructional model can create varying learning spaces is through re-arranging existing classrooms in ways that would reflect and cater to the needs of the groupings the designer has settled on in the design.

Another important prescription in the Gerlach and Ely model is the recommendation to select appropriate resources that can be used to fulfill the objectives identified at the beginning of the design. In selecting these resources, the designers are challenged to identify, find, acquire, and adapt resources that can either be used in their own right or utilized to augment existing instructional material. In situating this task, it is important to think about the availability and accessibility of identified resources and to clearly stipulate how they can be used in the implementation of the design. As stated earlier, the emphasis in classroom situations is on selecting from available resources rather than developing instructional material from scratch in order to save both time and money, since the designed instruction may be used only a few times and for only a specified class of learners (Gustafson & Branch, 1997; Davidson-Shivers & Rasmussen, 2007).

Last, the Gerlach and Ely model of instructional design emphasizes the creation of an evaluation plan that can be used to appraise learners’ achievement after they have interacted with the design. Such evaluation should consider the general efficacy of the design as well as learners’ attitudes towards the instruction and the content. The evaluation should be closely linked with the course objectives identified at the beginning of the design. This can provide essential feedback to teachers and designers on design effectiveness in terms of content, strategies used, and the overall implementation procedure (El-Ghalayini & El-Khalili, 2012).

THE VAN PATTEN PRODUCT DESIGN MODEL

The Van Patten Product model is an example of an instructional product model used in the production of instructional products. Using the Van Patten Product model usually culminates in digital or paper-based instructional products such as CDs, DVDs, web-based applications, manuals and other paper-based training material. The nine phases of this instructional model include analysis, design, development, tryouts, review, production, duplication, implementation, and maintenance. The Van Patten Product model when used usually has one or more people responsible for evaluating it. This model specifies the tangible artifacts created during each phase, as well as the personnel responsible for both creating and evaluating those artifacts (Gustafson & Branch, 1997; Hilgart, Ritterband, Thorndike & Kinzie, 2012; Davidson-Shivers & Rasmussen, 2007). Below are brief explanations of the various phases that make up the core components of this model.

- **Analysis:** In this phase, the designers’ tasks include identifying the problem, the audience the finished design will serve, the kinds of resources available to help in the design development, and the goals the design will yield after end-users of the product have performed specified tasks.
- **Design:** Instructional designers use the design phase to prepare the blueprint that will guide the final design. This is the phase where the specifications of the design are rendered. In other words, it is during the design phase that the foundation of the product is developed.
- **Development:** The development phase is that in which all draft materials are developed in preparation for the final design. Other sub-phases might include defining the various topics of the design layout;
providing examples for each topic that has been defined, instituting practice exercises for each example used in the course of making the product, and developing everything else that can aid in the smooth and effective implementation of the finished design.

- **Pilot Test:** This phase, also known as the tryout phase, works collaboratively with the review phase in an interactive loop and can be repeated as many times as necessary until instruction is deemed ready for implementation.

- **Review:** The review phase is often deployed after the product has been tested and further data is collected to be used in improving the product. This phase utilizes data collected from the tryout phase to improve the quality of the product being developed.

- **Production:** This is the phase where all material is taken through final production and is prepared for duplication. In principle, this is the phase where the design is finalized after a series of tryouts and revisions. At this stage the product is certified, and is deemed ready to be implemented.

- **Duplication:** In the duplication phase, an inventory of all the material needed for the preparation and distribution of a product is prepared. This is the phase in which the finalized design is reproduced in accordance with the number of prospective users or size of geographical reach.

- **Implementation and Maintenance:** These two are often discussed together, because they constitute an interactive loop that remains active for as long as the product stays in use. Implementation is the stage where the product is made available to users after it has been finalized. Once the product has been made accessible to end-users, maintenance is set in motion. The maintenance phase is responsible for fixing problems and providing answers to queries pertaining to the product for as long as it stays in use.

The Van Patten instructional model emphasizes extensive piloting and revision before finalizing a product. The model underscores the importance of the implementation and maintenance phases in the lifecycle of a product, even though these phases are not mainstream characteristics of a product’s development. In instances where a product is designed to be publicly marketed and sold to independent consumers, no formal implementation or maintenance would likely occur, because these phases would have become the responsibility of the consumers who acquire the product. As a major shortcoming, this model lacks operational details, a deficiency which tends to limit its use to only institutions that are already familiar with the specific procedures needed for performing the activities described above (Van Patten, 1989).

**THE DICK AND CAREY DESIGN MODEL**

This model is presumed to be one of the most flexible choices for designing instruction for systems situations. Affirming its flexible characteristic, the model is popularly used for developing instruction for both the product and systems situations. However, its use is highly dependent on the range of activities the designer chooses to implement at the initial stage of the design -- the stage where the instructional goals for the finished design are identified (Dick & Carey, 1996; Dick, Carey & Carey, 2001). The Dick and Carey (1996) instructional design model sets out a ten-step activity. The first step requires the instructional designer to assess and be familiar with the needs of the prospective design users with a view to identifying the appropriate goals to be incorporated into the design. The analysis of needs in this design model follows two parallel paths: analyzing needs in the context
of the instruction to be developed on the one hand, and on the other, the needs of the learner who will use the completed instruction. Instructional needs analysis is primarily concerned with identifying the various skills and knowledge to be included in a design. Instructional knowledge and skills under this analysis usually includes intellectual skills, verbal information, psychomotor skills, and attitudes. In this regard, instructional need analysis determines not only what will be taught, but also how the final instruction will be implemented so it can be effective. In the view of Dick, Carey, and Carey (2005), analyzing the context of learners is important in giving designers an insight into the makeup of prospective learners.

Designers can use this insight to design more pointed instruction, which will be effective with the target learners. In analyzing the context of learners, designers collect data on prospective learners’ intelligence and personality traits and on other important variables that can help the designers understand their situation. During the process which analyzes the learners, information is collected on the environment within which the finished design will be operational (Morrison, Ross, & Kemp, 2010; 2012; Davidson-Shivers & Rasmussen, 2007).

Once the various needs analyses have been completed, the instructional design process goes through five additional steps that form a chain which can be re-entered at any stage of the design process. The design process continues with designers putting together the performance objectives. In formulating these objectives, designers are cautioned to focus on making them measurable. The objectives writing phase is followed by the stage in which the instruments that will be deployed to measure the learning objectives are developed. Designers next concentrate on the strategies that will be used to guide the learners for whom the design is being developed. After this, they develop and choose instructional resources they deem necessary for the success of the design. The last activity in this five-step stage is the designing and conducting of formative evaluation. This process is essential in generating data that can be used to improve the effectiveness of the design as it is in the process of being designed. Next comes the revision phase, where program creators amend design aspects that fail to respond appropriately after piloting or other test forms, based on the outcome of the formative evaluation. Once the design becomes operational, its evaluation moves from the formative to the summative stage. De-
Designers or design implementers use summative evaluation to assess the degree to which the instructional objectives set out in the instruction have been achieved. Finally, designs are either scrapped altogether depending on the outcome of the evaluation, or upheld with or without some revisions (Dick & Carey, 1978; 1996; Davidson-Shivers & Rasmussen, 2006; Morrison, Ross, Kalman, & Kemp 2012). Figure 2 illustrates the Dick and Carey model as an example of a systems instructional design model.

CONCLUSION

Two approaches have been used to probe the statement of Gustafson and Branch (2007) under discussion here. The first approach focuses on certain assumptions that govern three design situations: namely the Classroom, Product, and Systems. The discussion highlights a string of preconditions that designers need to be aware of if they are challenged to identify the kind of design situation they face. In the view of Gustafson and Branch (2007), an understanding of these assumptions enables program creators to designate appropriate design models to prospective design situations. The second approach identifies and discusses some key characteristics of prospective Classroom, Product, and Systems design models. Discussions of the second approach tests the view that an understanding of the respective characteristics by designers is necessary to appropriately match existing assumptions with the evident characteristics of instructional design models to enable them designate certain design models as fit for use for Classroom, Product, and Systems situations respectively.

Drawing from the above, it can be concluded that understanding the three main classes into which instructional design situations can be placed is quite helpful. A grasp of these characterizations includes an appreciation of the assumptions that exist in design situations. Understanding the assumptions as discussed here is important in guiding instructional designers to properly designate an instructional situation as a Classroom, Product, or Systems. This is the first step in the ultimate choice of an appropriate instructional design model based on the match between the situation assumptions and model characteristics. Using an aggregate approach in which designers can match situation assumptions with model characteristics, it becomes easier to pair up instructional design models with design situations such as the Classroom, the Product, and System (Gustafson & Branch, 2007).

REFERENCES


**KEY TERMS AND DEFINITIONS**

**ADDIE:** An instructional design strategy that emphasizes the use of Analyzing, Designing, Developing, Implementing, and Evaluating of the instruction environment and the product to produce efficient instructions.

**Classroom Design:** Instruction created for use in classroom, mostly in face-to-face sessions.

**Instruction:** A series of activities designed to culminate in the transfer of knowledge to learners.

**Instructional Designer:** A person(s) professionally competent in creating instructions.

**Instructional Situation:** A condition that creates the need for an education designed to fulfill a need.
Using Instructional Design Goals to Appropriately Classify Instructional Design Models

**Product Design:** Instruction created for use across multiple geographical locations. These designs are usually self-directed by the end-user, with facilitators playing mostly supervisory roles.

**Subject-Matter Expert:** A person(s) who possesses an in-depth knowledge of the subject matter on which an instruction is being developed.

**Systems Design:** Instruction designed for use across a system. It could either be delivered face-to-face or remotely across the system.

**Tryout:** Testing out a product or design to determine its readiness to deliver on its goals.
Chapter 11

A Model for Improving Online Collaborative Learning through Machine Learning

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ABSTRACT

Online collaborative learning provides new opportunities for student collaboration in an online learning environment and at the same time spawns new challenges for teachers supporting group work. With the current Course Management Systems (CMS) such as Moodle, technology has provided online tools that include discussions forums, chat rooms, e-mails, newsgroups, workshops, etc. These tools provide a collaborative learning environment. To include constructivist learning in an online learning environment is a good collaborative strategy that is necessary since it engages learners in learning activities through interaction with their peers and teacher. A good collaborative strategy in an e-learning environment must primarily ensure that the expected interaction occurs in line with the learning mechanism being employed. This cannot merely be met by offering a set of collaborative software tools alone. It also requires the instructors’ support. As the number of students studying online continues to increase, there is need to develop models that can improve online collaborative learning with minimal involvement of the instructor because the instructor might not be able to cope with increased number of students. To address this need, this chapter discusses a novel model for improving online collaborative learning that uses Machine Learning (ML) techniques.

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A Model for Improving Online Collaborative Learning through Machine Learning

INTRODUCTION

The use of discussions forums for online learning gives the learners a chance to collaborate online, critique one another, share knowledge and compare new concepts with one another. Discussion forums create a platform where learners can learn on their own with the opportunity of sharing experiences and construct knowledge based on their cognitive level (Corich, S., Kinshuk & Hunt, L., 2004). By introducing e-discussion forums it becomes possible to have social affective and cognitive benefits of face to face situations realized (Hiltz, 1990). In a normal learning environment such as a classroom, learners are encouraged to engage in discussions, form groups, participate in group activities and debate on topics presented in classrooms. This forms the collaborative process in class which is supported by the teacher who can address the specific needs that arise during their group discussion.

In an e-learning environment collaborative software tool can allow learners to work on separate computers but engage in a collaborative process by communicating in synchronous or asynchronous manner. This lacks the teacher support making the collaborative process to be static rather than adaptive. With the scarcity of instructors and continuing increase in the numbers of students enrolled online, there is a need to explore artificial intelligent techniques such as Machine Learning (ML) which can analyze students’ interaction data in an online group activity and provide data which can be used to reinforce the collaboration process. This provides an active learning environment within the existing collaboration tools in a Course Management Systems (CMS), hence improving the collaboration process with minimal support from the instructor. This will in turn support the social constructivist theory in an online learning environment which has gained popularity.

The primary objective of this chapter is to discuss a model which can improve online collaborative learning process with minimal support from the instructor by incorporating the following techniques in the existing models:

1. Intelligent techniques for analyzing discussion data in a discussion forum and creating learners collaborative competence levels.
2. An intelligent technique for creating heterogeneous groups based on collaborative competence levels.
3. A platform which can provide immediate feedback to reinforce the student level of collaboration.

BACKGROUND

With the increased demand for education, distance learning has gained popularity and therefore teaching online is no longer a new event. Use of online technologies to supplement face-to-face instruction has yielded a blended learning (Ganzel, 2001; Mantyla, 2001) which has changed the traditional learning that is based on a classroom environment. Constructivist psychology advocates the use of collaborative tools such as discussion forums in e-learning as they argue cognitive development is as result of social interaction (Vygostky, 1978; Siemens, 2004). Other researchers have also explored how constructivism and connectivism learning theories can be adequately used in education technology for the digital age (Mattar, 2010).

Researchers have demonstrated that learning is more effective if peers collaborate and share ideas by solving a task as a group rather than as individuals (Johnson and Johnson, 1989) and through group work construction and synthesis of knowledge by the individual outperforms individual learning (Brindley, Blaschke & Walti, 2009; Moller, 1998). Although collaboration can be done without limiting the number of students in the group, research has shown that smaller groups of three to five are more effective as students are
able to interact more, exchange ideas more often and also provides almost equal opportunity to participate in the group discussion (Gayattan & McEwen, 2007; Finegold & Cooke, 2006; Liu, Joy & Griffiths, 2010). Research has been carried out to investigate the learners’ satisfaction (Singh, 2005), perceived usefulness and challenges (Song, Singleton, Hill & Koh, 2004; Kim, Liu & Bonk, 2005), and factors leading to unsuccessful group collaboration (Roberts & McInnerney, 2007; Liu et al., 2010) in a collaborative online learning environment.

In recent years, ML techniques have been applied to support collaborative learning process and improve learners’ interaction in e-discussions (McLaren, Miksatko & Scheuer, 2010; Anaya & Boticario, 2009; 2010; 2011). These researchers have paid more attention to asynchronous threaded discussion which is more appropriate to online collaboration because it gives learners a chance to digest the problem and discuss possible solutions for the task (Kaye, 1992). Learning accompanied by online discussions which are asynchronous gives room for learners to extend their classroom learning with deeper discussions of ideas at their own convenient time (Smith, 1994).

CONSTRUCTIVIST LEARNING

The theoretical framework underlying this discussion is the social constructivist learning theory (Vygotsky, 1978). Collaborative learning borrows from social constructivist pedagogy which advocates a learner centered instructional strategy which involves social processes requiring students to work together in groups to complete academic problem solving tasks designed to promote learning (Benbunan-Fich, Hiltz & Harasim, 2005). Social constructivist pedagogy can be traced back to the work of Soviet Psychologist Lev Semenovich Vygotsky. Vygotsky (1978) explained, “Human learning presupposes a specific social nature and a process by which students grow into the intellectual life of those around them” (p.88). Vygotsky constructivist theory of learning can be explained in details by considering two important concepts: “interaction of social and psychological/cognitive planes” and “Zone of Proximal Development (ZPD)”.

In his first concept, a child’s development appears on two planes: the social and psychological planes. At the social plane the child is expected to perform certain tasks under social settings with the help of others and later the same functions appear at the child’s psychological level. According to Vygotsky (1978), the student’s development appears among people as an inter-psychological category, and within the students as an intra-psychological category. In an inter-psychological category, student’s construction of knowledge is preceded by his/her internalization of social relations.

In the second concept, Vygotsky explains the Zone of Proximal Development (ZPD) representing the distance between two conceptual levels of cognitive zones: the real level of development and the potential level of development. Vygotsky (1978) defined the ZPD as “the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (p. 86). Therefore, ZPD becomes the cognitive zone in which children can work with more knowledgeable peers to perform tasks and later perform them independently. Within ZPD, “children can act as apprentices, guided toward greater proficiency in performing tasks by mentors who are more experienced participants in the activity than the learner” (Petraglia, 1998, p.45).

Since collaborative learning finds its roots from social construction of knowledge, collaboration becomes an important aspect of learning for the constructivist pedagogy. In collaborative learning, the goal is to create social interaction which will result in the acquisition or construction of new knowledge. According to Vygotsky collaboration
is more fruitful when learners collaborate with more experts or peers because what an individual does jointly with others can be incorporated into his/her individual problem solving process. Based on Vygotsky’s ZPD concept, Tudge (1990) explained the effectiveness of collaboration by stating that: “children who were led to think at a higher level through being paired with a more competent peer achieved that higher level in the course of collaboration and generally retained it in subsequent independent performance” (p.163).

Engaging students in collaborative learning has been recognized as a powerful method to motivate learners. However collaborative pedagogy in the digital technology has changed the ways in which students interact with their instructors within the learning process. Research has been conducted to address collaborative pedagogy in the digital technology (Harasim, Hiltz, Teles & Turoff, 1995; Barrows, 1994; Koschmann, 1996; Palloff & Pratt, 1999). With the realization of digital technology online collaborative learning provides new opportunities for student collaboration in an online environment and new challenges for teachers supporting group work (Bonk & Kim, 1998; Palloff & et al., 1999). The digital technology has provided online tools like discussions forums, chat rooms, e-mails, newsgroups, workshops, wikis, etc., which provides a collaborative learning environment.

From previous research on discussion forums, the following advantages can be noted out:

1. Discussion forums create a platform where learners can learn on their own with the opportunity of sharing experiences and construct knowledge based on their cognitive level (Corich et al., 2004).
2. With e-discussion forums it is possible to have social affective and cognitive benefits of face to face situations realized (Hiltz, 1990).
3. When discussion forums are managed well it becomes a major tool for supporting e-learning as they encourage learners to share knowledge and build new ideas from shared concepts (Garrison, 1993).
4. Online tools for group activities like the discussions forums and chat rooms allows learners to build self-esteem, learn to accommodate diverse opinions on issues, enhance their listening and communication skills and develop skills needed in team workforce (Johnson, Jonhson, Holubec & Roy, 1984; Taylor, 2004).

**CONCEPTUAL FRAMEWORK**

Studies in online collaboration learning have generally analyzed collaboration process in a number of ways including: the number of logons and length of messages (Mason, 1992), text analysis through shape coding mechaniSMS (McLaren et al., 2007), statistical indicators which are related to learner’s collaboration like number of messages sent/replied and threads in a conversation initiated by the learner (Anaya et al. 2009). However, most of the analyses only review the usage statistics which are only useful for assessing participation or evaluating the collaborative activity in collaboration but they don’t tell us about the quality of the discussions like: sharing ideas, constructing knowledge, new ideas, etc.

As noted from previous research there is lack of good methodologies and standards to analyze online collaboration (Anaya A. et al., 2011). Most of the tools also discussed in previous studies do provide little support to the instructor in managing the collaboration process. Therefore there is need to build a framework which applies both statistical analysis (quantitative) and content analysis (qualitative) to analyze collaboration and provides more
assistants in managing the collaboration process. Our proposed framework is based on Management collaboration cycle framework (Soller, A., Martínez, A., Jermann, P., Muehlenbrock, M., 2005). Although this framework discusses how to support collaboration process by use of mirroring and meta-cognitive tools, the idea of improving collaboration process by use of artificial intelligent techniques was not incorporated. This chapter discusses a model which incorporates ML techniques for analyzing the collaboration process within the management cycle and classifies students as per their collaborative competence level (Laura, Silvia & Ramón, 2008). This competence levels provide a platform in the model for creating new groups which are heterogeneous and a learning platform where the instructor can propose activities to reinforce student’s level of collaborating.

Soller, et al., (2005) divides the management of collaboration process into five phases:

**Phase 1:** Collecting interaction data,
**Phase 2:** Constructing a model of interaction; this phase requires the computing of indicators to represent the current state of interaction. Statistical tools can be used to analyze interaction data and provide these indicators,
**Phase 3:** Compare current state of interaction to desired state,
**Phase 4:** Advise/guide the interaction, and
**Phase 5:** Evaluate interaction assessment and diagnosis.

Although the framework explains how to manage collaboration process it lacks a guideline on how to integrate intelligent systems into the collaboration management process. In our model we do incorporate ML techniques in the following phases:

**Phase 2:** ML techniques can be used to analyze interaction data and provide learner’s collaboration competence level.

**Phase 3:** ML techniques can be used to compare the current state of interaction with desired state and provide relevant information which can be used to improve the collaboration process.

**Phase 4 and 5:** Intelligent techniques can be used to automate the process of generating advice or guidance and also automate the interaction assessment and diagnosis.

In the light of the above arguments, we formulate a framework which will analyze collaboration process using ML techniques and model learner’s collaboration competence level, initialize groups and provide advice or guidance based on this collaboration competence level as shown in Figure 1.

**COLLABORATION COMPETENCE LEVEL**

Collaborative group work can be characterized by three critical attributes: Interdependencies which refers to the pattern of participation and interaction in the group (Johnson et al., 1998), synthesis of information which refers to creation of something new/idea (Kaye, 1992) and independence which refers to autonomous actions by the learner (Laffey, Tupper, Musser & Wedman, 1998). By use of these three characteristics, we can introduce some indicators in our model which can be used to measure the relative amount of interdependence, synthesis, and independence and hence the collaboration competence levels.

Interdependence requires active participation by each member; participation can be measured by counting the number of messages and statements submitted by each individual and the group to the other participants. This can allow both groups and individuals to be compared in their level of participation. Independence on the other hand can be analyzed by measuring the extent of influence by the instructor or other participants in individual
individual who post new ideas rather than just replies are more independent hence, more collaborative. Synthesis can be measured in two ways: first by the interaction pattern of the discussion that occurs when a participant contributes a statement, another participant synthesizes it by extending the idea and subsequent messages yields new ideas. This requires content analysis of the individual thread contributed in the discussion. Secondly, synthesis can be analyzed by examining the relationship between original comments and the final product. For our case we apply the later where the instructor compares the post with the final product and assigns a numerical value as per the relevance. This in turn can tell us the level of individual contribution in relation to the final product. We apply these three attributes to define three collaboration competence levels as described in Table 1.

Table 1. Collaboration competence levels

<table>
<thead>
<tr>
<th>Collaboration Competence Level</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>If a student logs-in often, participates and interacts actively by sending new post is rated high - his/her profile is highly collaborative. In this case the collaboration competence level is high.</td>
</tr>
<tr>
<td>Medium</td>
<td>If a student logs-in often, participates and interacts moderately by sending a few post is rated moderate - his/her profile is moderately collaborative. In this case the collaboration competence level is medium.</td>
</tr>
<tr>
<td>Low</td>
<td>If a student logs-in and does not send new posts or makes any replies then his/her profile is non collaborative In this case the collaboration competence level is low.</td>
</tr>
</tbody>
</table>
Applying ML Techniques to Model Learner’s Collaboration Competence Level

Recently, a good number of researches have used machine learning techniques which can emulate the role of an instructor in improving the collaboration process with positive outcomes (Anaya et al., 2009, 2010, 2011; McLaren & et al., 2010). In this discussion we demonstrate the use of ML algorithms to analyze discussion forums data and model learner’s collaboration competence level. We adopt the use of clustering algorithms based on the fact that, with sufficient data they can group instances with no prior knowledge of the relevant attributes.

From our proposed model we need to integrate these clustering algorithms into CMS like Moodle which stores the discussion forums data in a relational database Management System (RDBMS). Moodle e-learning platform was selected because:

1. It is an open-source learning course management system which is utilized by the larger community in higher learning institutions and the availability of its source code made it possible to integrate it with clustering algorithms.
2. Moodle is designed with a number of activities such as chat, forum, glossary, wiki and workshop which do support collaborative learning.

The clustering algorithms are imported from Weka software (Ian, Eibe, Mark & Hall, 2011) which has a set of well organized collection of state-of-the-art machine learning algorithms and data preprocessing tools. To integrate Weka into Moodle the following was done:

- Moodle 2.3 was installed on the Windows Server
- Weka Jar lib was added to the Windows Server
- Weka Jar lib was invoked from the Moodle PHP code

To develop this model we have worked with data stored in MySQL database in Moodle from discussion forums. Although forums data have many attributes we have utilized three attributes which possess data which correspond to the three indicators of collaboration (Interdependencies, Independence and Synthesis). The first attribute is a new post which is an original idea; the second is a reply to post which correspond to a response to an existing idea and the third is average rating of the posts which indicates the level of relevance of the post on the issues under discussion. To determine learner’s collaboration competence level the following two major steps were adopted:

1. Preprocessing the Moodle forum Data.
2. Applying clustering algorithms to create collaboration competence levels.

**Preprocessing the Moodle Forum Data**

Preprocessing the data requires the data to be cleaned and transformed into an appropriate form which can be processed by Weka clustering algorithms. Moodle forum data and forum rating is stored in the following tables, namely:

1. *mdl_forum*: Stores information about all forums.
2. *mdl_forum_posts*: Stores all posts to the forums.
3. **mdl_forum_discussions**: Stores all forums’ discussions.
4. **mdl_rating**: Stores the average rating of the posts.

Since the data is stored in a RDBMS less cleaning and preprocessing is required and for our case we only create a summarization table with the required fields from the above tables and export the result to a text file with CSV format which is applicable to Weka tool. To create the summarization table the SQL statement in Box 1 is used.

The summary table is stored as text file with .cvs extension and it has the following columns:

1. User id(taken from mdl_role_assignments by checking the role and enroll conditions)
2. Number of posts (taken from mdl_forum_posts)
3. Number of replies(taken from mdl_forum_posts)
4. Forum ratings(taken from mdl_rating)

This summary table is fed as an input to the Weka.php program which has the clustering algorithms.

**Box 1.**

```sql
SELECT role.userid,count(if(post.parent=0, post.userid,NULL))AS Numberofpost, count(if(post.parent!=0, post.id,NULL)) AS Numberofreplies, 
(SELECTround(COALESCE(avg(rate.rating),0)) from mdl_rating AS rate where role.userid=rate.userid and rate.component='mod_forum' and rate.ratingarea='post') AS avgrating
FROM
mdl_context AS context INNER JOIN mdl_role_assignments AS role
ON role.contextid=context.id and role.roleid=5 LEFT JOIN
mdl_forum_posts AS post ON role.userid=post.userid
WHERE context.instanceid=$courseid and context.contextlevel=50group by role.userid
```

**Sample Results on Clustering**

In Moodle a custom ‘Discussion’ block is created to view and manage the clustering algorithms from the Weka.php program. The custom block has the cluster option which can be accessed by the instructor in his/her course. The cluster option is supposed to load the Weka.php program which provides the user interface for creating the clusters which corresponds to the collaboration competence levels specified by the instructor.

To define the number of clusters, we use the three collaboration competence levels (High, Medium and Low) as described in the Table 2.

To create clusters the instructor is required load the Weka.php program and input the following:

1. The type of clustering algorithm by selecting from a drop down list.
2. Number of clusters which should correspond to the number of collaboration competence levels.

For example, Figure 2 shows clustering results for a discussion forum with 44 students in unit CIT 300 where the clustering algorithm is SKmeans and the numbers of clusters are 3.

Data from these three clusters is stored in Moodle database inform of collaboration competence levels mentioned above.

**Table 2. Clusters based on collaboration competence levels**

<table>
<thead>
<tr>
<th>Cluster Number</th>
<th>Collaboration Competence Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster 0</td>
<td>High</td>
</tr>
<tr>
<td>Cluster 1</td>
<td>Medium</td>
</tr>
<tr>
<td>Cluster 2</td>
<td>Low</td>
</tr>
</tbody>
</table>
Using Collaboration Competence Levels to Improve Collaborative Learning

From our conceptual framework we need to use the collaboration competence levels for two purposes:

1. Create heterogeneous groups.
2. Provide immediate feedback to students based on their collaboration competence level.

We describe the implementation of these two tasks in details.

Create Heterogeneous Groups

To create heterogeneous groups the data stored in the three collaborative competence levels is converted to an array with userID values. A randomizing algorithm created using php ‘randomarray’ function takes the array as input and produces an output array with randomized userID values. For example if cluster 0 which correspond to higher collaborative level has userID values as per this order: 12,34,56,23,47 then after randomization the order changes to: 34,47,23,56,12. This randomization task is done for all clusters and then userID are ranked from cluster 0 (highly collaborative) to cluster 2 (low collaborative). The result is stored in an array called ‘rankedArray’. It’s from the ‘rankedArray’ we apply an intelligent grouping algorithm which picks students from different collaborative levels as per the rank and assigns them to one group. For example from our previous case where we had 44 students distributed in three clusters the instructor can go ahead and specifies to create ten groups through the intelligent grouping algorithm. The algorithm should distribute students from one level to different groups so that a heterogeneous group is created. Students who are in cluster 0 are assigned a mentor role in their group membership as this cluster constitutes highly collaborative students. Results of this example are illustrated in Figure 3. The instructor now can go ahead and click the next button to move the group data into moodle tables (mdl_groups, mdl_groups_members). These groups are now
A Model for Improving Online Collaborative Learning through Machine Learning

Provide Immediate Feedback to Students Based on Their Collaboration Competence Level

To provide immediate feedback we do create an interface in Moodle which allows the instructor to SMS or email either the whole group in that cluster or select a single student in that cluster depending on whether the feedback is for the entire cluster or for a single student. For the SMS module the Moodle interface was integrated with an API platform provided by Africa’s Talking. For the email the mail server was configured to allow emails to be sent from the Moodle database. For the SMS and email services to work, the instructor is required to enroll students to a course and provide the email and the mobile phone details for each student. Emails are recommended to be available in the grouping module in Moodle and the instructor can assign them discussion forums or any other group activity as desired.

Figure 3. Screenshot for results based on the intelligent grouping algorithm
used when the instructor wants to provide lengthy feedback while SMS is recommended for short messages. For example if an instructor wants to elaborate to a student on how to improve his/her performance in the collaborative work a mail service is recommended but if the instructor wants to pass a quick notification on the performance to a group or individual an SMS is recommended. Figure 4 shows a screenshot for sending the SMS and emails as per the collaboration competence levels (clusters)

If the instructor wants to send a particular SMS or email to particular student in the cluster then the instructor needs to click on the particular cluster and load an interface which allows selection of individual student. Figure 5 shows a screenshot for selecting a single student from cluster 2 in order to send an individualized SMS.

**FURTHER RESEARCH**

We intend to experiment our model by testing the system in a realistic e-learning environment in two phases described below:

**Formative Evaluation**

This evaluation will be carried out in order to identify possible errors and point out further modifications and improvements to achieve the required performance of the system. This stage involves testing of the working system with the intended users. Students who will be undertaking an online course will be selected, and through their facilitators they will be requested to participate in some discussions on selected topics with the system. Observations and comments from both
facilitators and students will be collected and, when appropriate they will be used to update the system.

**Summative Evaluation**

Once the system is error free an experiment will be done in a realistic online collaborative learning environment to evaluate its impact in improving online collaborative learning. This evaluation will involve the use of an experimental group and control group. Observations from facilitators and semi-structured interview with the facilitators at the end of the study will be conducted. A questionnaire will also be administered to the student at the end of the study to investigate the student’s impression on the system.

**CONCLUSION**

This chapter has discussed a model which can be used to improve online collaborative learning by using machine learning techniques and implementation details of our model have been discussed. But it has only focused on clustering algorithms therefore there is a need to do more research with other machine learning algorithms which could also provide mechanisms for improving the collaborative learning. We also focused only on three attributes when clustering the learner’s and therefore, further research need to explore more with other attributes with different clustering algorithms.
ACKNOWLEDGMENT

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REFERENCES


**KEY TERMS AND DEFINITIONS**

**Clustering Algorithm:** Is a computer program which performs the task of grouping a set of objects in such a way that those with similar properties or behavior are put in the same group.

**Collaboration Competence Level:** The ability to participate in a collaborative activity and attain a specific level of performance required in the collaborative activity.
Collaborative Learning: Situation in which two or more people learn or attempt to learn something together. The situation is termed “collaborative” if peers are more or less at the same level, can perform the same actions, have common goal and work together (Dillenbourg, 1999).

Constructivist: Is a learning theory which advocates the use of Constructivism and connectivism learning theories. In this two learning theories knowledge is constructed through social interaction and the learner is an information constructor.

Course Management System (CMS): Is a collection of software tools which allows instructors to put their course materials online and provides a number of online tools which manages the learning activities. Modular Object-Oriented Dynamic Learning Environment (Moodle) is an example of CMS which is commonly used in higher learning institutions.

Discussion Forum: Is a program which allows members to hold discussions online. One member starts the discussion by posting a topic and other members reply. This allows members of the same group to share information and ideas.

Machine Learning: Is an artificial intelligence discipline geared towards the development of computer programs which learns how to perform a task through self training or experience and they are able to improve their performance and handle new tasks (Mitchell, 1997).
Chapter 12
Blogs in Teacher Education: Knowledge Sharing among Pre-Service Teachers on a Group Course Blog

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ABSTRACT
This chapter examines the content of written blog postings of students enrolled in a face-to-face course focusing on literacy assessment methods and practice for Pre-Service Teachers (PST) seeking elementary teaching certification. The purpose of the study was to examine the transcription of the students’ postings and Computer-Mediated Communication (CMC) to look for the three types of elements that comprise the Community of Inquiry according to Garrison, Anderson, and Archer (2001) as well as the examination of broader themes and trends across the data (Corbin & Strauss, 1990). Data included blog posts from a 15-week semester with a total of 702 combined posts and comments from a total of 40 undergraduate students. Data were analyzed using the constant-comparative method (Strauss & Corbin, 1990) and the framework of the Community of Inquiry Model (Garrison & Arbaugh, 2007). Students engaged in various levels of cognitive stages of inquiry while also building on and developing social presence throughout the course. Teacher presence also guided the social construction of knowledge throughout the course. Examination of the teacher presence suggests that the instructor needed to provide more scaffolding in modeling evidence-based practice and problem-solving on the blog as students did not always connect their practice to evidence-based or text-based support.

INTRODUCTION
An ongoing challenge for instructors is finding the best ways of using emerging technologies and tools without the benefit of robust research that what we are doing clearly benefits our students’ learning and engagement. One technology tool that can be used in blended learning contexts (as well as online-only contexts) is that of the communal or shared weblog (blog) where the entire class of students can regularly post reflections, receive feedback that is visible to all, and share resources with peers. A blog is akin to an online diary and offers students a shared computer-mediated communication (CMC) space for group knowledge sharing and dialogue. In the case study described...
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in this chapter, I share how forty undergraduate students participated in a group blog in conjunction with a face-to-face undergraduate literacy course designed for pre-service teacher candidates.

The overall purpose of the qualitative exploratory study was to examine the transcription of the students’ postings and computer-mediated-communication (CMC) across the semester to look for the three types of elements that comprise a “community of inquiry” according to Garrison, Anderson, and Archer (2000; 2001) as well as to examine the primary research question: How did the communal blog function to support a “blended learning” context where learning primarily took place in a face-to-face setting? The study examines the content of the written blogging postings of a class of students who were enrolled in a pre-service course focusing on literacy assessment methods and practice.

The undergraduate students communicated with each other within the digital blogging community and were guided by semi-structured professor-designed prompts, multi-modal supplemental readings (such as YouTube videos and podcasts). Students were provided guidelines and a simple rubric for the blogging assignment. They posted blog commentary across the course of a full-length semester in spring, 2009. Through the blogging assignment and process, students made connections to key ideas in the course content, actively participated in an online community (within a face-to-face course), and developed their skills with digital writing and learning. The blog topics focused on their present understanding of course content as well as their goals in their case study and future teaching. The group blog served as a knowledge sharing tool towards building a community of practice (Lave & Wenger, 1991) as well as an assessment tool for participation and engagement with the course content and readings. The blog was also a way for students in a teacher education course to participate in new digital literacy practices (as described by Leu, Kinzer, Coiro, & Cammack, 2005) by reading and writing in an online-only format. This idea of group blogging in a face-to-face or blended teaching setting would be of interest to anyone teaching a face-to-face class where students share knowledge as it is being applied to specific teaching contexts or scenarios. The blogging experience would also be of broad interest to anyone looking to explore or improve their practice in the area of blended learning, broadly defined.

BACKGROUND

Community of Inquiry and Blended Learning

This research draws upon a sociocultural framework which emphasizes that learning is based on apprenticeship and teaching occurs as a result of the co-construction of knowledge in shared communities of practice (Rogoff, 1990; Vygotsky, 1962). I also draw on models of knowledge sharing and theories of tacit knowledge (e.g. Polanyi, 2009) to examine the complex ways that students supported one another in the blog space with the absence of the course instructor on the blog postings.

Within such a sociocultural framework, I specifically focus on the Community of Inquiry framework developed broadly by Garrison, Archer, and colleagues (especially Garrison & Arbaugh, 2007). In applications to online learning, this framework delineates three crucial but inter-related categories in designing and analyzing computer-mediated communication. The three types of elements that make up a Community of Inquiry according to Garrison, Anderson, and Archer (2000) include the teacher presence, cognitive presence, and the social presence. Teacher presence is facilitated by the up-front design of the course or online experience, direct instruction by the teacher, and use of facilitating discourse (Garrison, Anderson, & Archer, 2000). Cognitive presence, for
instance, includes problem-solving, application of knowledge, and attempts to solve the problem or problems; Social presence is characterized by online collaboration and expressiveness (Garrison, Anderson, & Archer, 2000).

Additionally, I draw on a broad definition of blended learning that captures the use of both online learning in conjunction with a face-to-face course setting. Blended learning can be hard to define but is generally thought of as a combination of both face-to-face teaching and online instruction to varying degrees; Picciano (2009) suggests the problem of the hard-to-define concept of “blended learning”:

There is no generally accepted definition of blended learning. There are many forms of blended learning but a generally accepted taxonomy does not exist. One school’s blended is another school’s hybrid, or another school’s mixed-mode. (p. 8).

Finally, blended learning has the potential to engage students. Garrison and Vaughan (2008) also suggest that blended learning is an active learning technique as opposed to lecture-style classes.

**Distributed Cognition and Tacit Knowledge**

This study is also informed by theoretical concepts from educational psychology such as distributed learning, or learning shared across groups beyond the individual’s own understanding (e.g., Salomon, 1993) as well as a framework of tacit knowledge; tacit knowledge is shared through interpersonal experience (e.g., Polanyi, 2009) as well as the experience of others. Salomon (1993), in describing the types of thinking and information shared by interacting groups of people states, “People think in conjunction and partnership with others and with the help of culturally provided tools and implements.” (Salomon, 1993, p. xiii)

**Blogging as Blended Learning**

Although there have been mixed outcomes for use of blogging with pre-service teachers as a tool for facilitating student reflection (Hungerford-Kresser, Wiggins, & Amaro, 2011; So & Brush, 2008; Top, 2011), there have been few studies on the ways that students who are novices in a practice (such as education) interact with one another to share distributed knowledge about literacy learning in a shared communal blog space. Additionally, digital knowledge sharing among students of a younger age demographic possibly has a higher level of appeal to “digital natives” who are accustomed to digital engagement in their learning (Prensky, 2001); such a practice is needed to stay current with the demographic of younger teachers within traditional teacher education programs.

**METHOD**

**Context of the Study and Description of the Blog**

The instructor of this course taught the Literacy Assessment course in spring, 2009 at a large, public university in a large urban city in the Southwest United States. The course is foundational and a required course for all teacher candidates enrolled in the elementary certification program. In conjunction with regular face-to-face settings, students also participated in required blog postings to a group course blog. The literacy course focused on furthering declarative knowledge (Snow, Griffin, & Burns, 2005), or general background knowledge related to classroom-based literacy assessment tools they will encounter in their future classroom. All students in the course were teacher candidates seeking elementary teaching certification at the university. As a required part of the course, students applied their knowledge of the course content by completing a “case study”
where they assessed a child and tutored the child in areas of academic needs in reading and writing. The case study assignment began in earnest around the mid-way part of the course. At the beginning of the semester, student blog prompts designed by the instructor were based on more theoretical and conceptual understandings of the course content. However, around early March of the spring semester, students began the application component of the case study assignment and the course learning outcomes. Blog posts from March on reflected this transition towards more of an application of course content.

The instructor implemented blogging and the shared course blog as an alternative to the traditional “reflective journals” that are typically not shared in a public forum. In using interactive technologies such as blogging combined with viewing of multi-modal learning resources such as embedded videos (via YouTube) and podcasting, students engaged in a shared “community of practice” (Lave & Wenger, 1991) centered around lesson plan design and application of a case study assignment and teaching scenarios.

### Data Sources

A total of 40 pre-service teacher candidates seeking initial elementary teaching certification (specifically, early childhood through 4th grade certification focus) were enrolled in the course. There were 37 females and 3 male students in the class who participated in the blog postings related to the course. The students were expected to compose and post an initial blog post as well as one to two follow-up comments on other students’ initial posts. At the beginning of the course, students were required by the instructor to complete ten original posts (with follow-up replies to peers) over the course of the semester, permitting student choice in which topics they would choose to participate in. However, due to the instructor’s realization mid-course that the amount of blogging may have been too much, the number of total posts required was scaled back to eight required posts over the course of the semester. The overall frequency of posts by week is listed below in Table 1 along with the weekly blog post topics. The frequency of comments includes both the student’s initial post as well as any follow-up replies to peers. A total of 702 posts and comments were shared across the semester.

### Data Analyses

Data were coded using the constant-comparative method (Straus & Corbin, 1990) and by using NVIVO 10 qualitative software. The course instructor (myself) also kept a reflexive journal during the course and used analytical memos

### Table 1. List of weekly blog prompts designed to facilitate sharing and dialogue

<table>
<thead>
<tr>
<th>Week</th>
<th>Frequency of Total Post and Comments</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>70</td>
<td>Welcome to [Name of Course]-Spring 2009!</td>
</tr>
<tr>
<td>2</td>
<td>60</td>
<td>Week 2: Major Concepts in Literacy Assessment</td>
</tr>
<tr>
<td>3</td>
<td>64</td>
<td>Topic for Feb. 10: Assessing Emergent Literacy</td>
</tr>
<tr>
<td>4</td>
<td>52</td>
<td>February 10: Choice Topic(s)!</td>
</tr>
<tr>
<td>5</td>
<td>49</td>
<td>Feb. 17: Choice topics again</td>
</tr>
<tr>
<td>6</td>
<td>49</td>
<td>Feb. 24: IRI’s &amp; Fluency</td>
</tr>
<tr>
<td>7</td>
<td>62</td>
<td>March 3: Word study</td>
</tr>
<tr>
<td>8</td>
<td>57</td>
<td>March 10: Resources for Case Study Success</td>
</tr>
<tr>
<td>9</td>
<td>51</td>
<td>Thoughts on ideas for case study part two—“Success stories”</td>
</tr>
<tr>
<td>10</td>
<td>60</td>
<td>March 24: Continue to share resources for your case study</td>
</tr>
<tr>
<td>11</td>
<td>53</td>
<td>Reader Response in the Classroom</td>
</tr>
<tr>
<td>12</td>
<td>24</td>
<td>April 7: Motivation</td>
</tr>
<tr>
<td>13</td>
<td>20</td>
<td>April 14: Videos on Word Study</td>
</tr>
<tr>
<td>14</td>
<td>13</td>
<td>Authentic Assessment</td>
</tr>
<tr>
<td>15</td>
<td>18</td>
<td>April 28: “Lessons Learned”</td>
</tr>
</tbody>
</table>
(Miles & Huberman, 1994) while reading and rereading the blog posts for emerging themes and trends. To look at teacher presence, I examined the nature of blog post topics and the impact they had on the nature of the discussion generated by students. To examine social presence and cognitive presence, I examined the nature of the discussion that generated both socially-oriented talk as well as cognitive problem-solving discussion. My own reactions to the blogging experience and “lessons learned” were recorded in both memos and the reflexive journal (Miles & Huberman, 1994).

RESULTS

I report here the emerging themes across the blog posts as they relate to the three types of presence in the course from the Community of Inquiry Framework (Garrison, Anderson, & Archer, 2000; 2001; Garrison & Arbaugh, 2007): teacher presence, social presence, and cognitive presence. The data analyses suggest that through asynchronous discussion in a blended learning environment students engaged in various levels of cognitive stages of inquiry while also building on and developing social presence throughout the course. Teacher presence (e.g., design of the blog, guidance towards knowledge and information sharing, and resource sharing) also guided the social construction of knowledge throughout the course. Blog use by students represented both positive and productive reasons for its use as well as constraints or disadvantages.

Prominent themes arose from analyses of the data (blog posts) in looking for social and cognitive presence (Garrison & Arbaugh, 2007). Students specifically engaged in problem-solving by sharing information they found that would support another student’s “plea for help”. Students largely shared their specific case study scenarios and asked peers directly for ideas for helping, fostering a community of practice (Lave & Wenger, 1991). Additionally, students often drew on their own narratives and life experiences when engaging in problem-solving, for instance, by relating course concepts to their own schema or background information.

Students worked collaboratively online to design and present their lesson ideas for their case studies, even though they ultimately implemented them individually. Critical conversations that helped students to authentically reflect and evaluate their own work asynchronously through online comments and conversations fostered active learning and critical thinking. Overall, problematic areas for the course blog included students’ general over-reliance on their own personal autobiographies and over-use of vignettes from their own lives; these constraints within this case study will be explored and discussed. One area of concern was that across all blog posts, few students connected their instructional decisions and thinking back to the course readings. Many of their discussions focused on connections to personal vignettes and experiences as opposed to more evidence-based practice.

Teacher Presence in the Course Blog

The teacher presence (Garrison & Arbaugh, 2007) primarily consisted of the initial course design and the creation of the blog topics and prompts. Teacher presence (e.g., design of the asynchronous discussion board and video content, guidance towards knowledge and information sharing, and resource sharing as described and defined by Garrison & Arbaugh, 2007) also guided the social construction of knowledge throughout the course. The instructor, in general, did not actively participate in the course blog and this may have hindered more in-depth cognitive problem-solving. Initially, students seemed overwhelmed with the assignment of weekly blog posting. An excerpt from a researcher memo is below and indicates this notion that there was too much instructor input in the initial blog prompts and the tasks required of students in their blog posts:
When I look back at the beginning of my first earnest attempt at designing a blog, I realize I frontloaded them with too much information. It would have been better if I had designed this so that some of this information was set up as resources. (Researcher Memo, 09/12/09)

Additionally, beyond creating the structure of the blog, I realized that I had not provided an exemplar blog posting or criteria for what constituted an effective blog post. The teacher-provided rubric for the student’s blog posts was limited to the specificity of length and deadlines. An instructor memo identified this idea:

I should have provided more guidance, perhaps, in posing a scenario or question that raised the level of reflection to a more distinct cognitive goal and a shared/constructivist problem-solving scenario. However, at the beginning of a course what could a teacher assume as baseline understanding of the topic? (Researcher Memo, 09/12/09)

Overall, the teacher presence (Garrison & Arbaugh, 2007) facilitated discussion and connection of course content to the course applications, for instance, in encouraging students to share information that would help others relating to the more applied case study assignment. However, overall, as noted in the next section, students primarily focused on more “real-world” knowledge sharing as opposed to connecting their application of learning to specific course readings.

Finally, a key element of the design of the blog was that each blog prompt allowed for students to have choices as to which topics they chose to post about. The Appendix shares an example of a blog prompt that was designed by the instructor to facilitate a semi-structured online conversation by students. It was also intended to provide additional multi-media and input for students such as links to audio podcasts, links to resources on a variety of course-related topics, and more resources beyond the course readings. The intent of such multi-modality was to provide engaging yet research-based resources that would also inspire students to locate their own online resources and links to share with their peers on the blog.

Cognitive Presence in the Course: Distributed Knowledge Sharing

Five prominent sub-themes arose from analyses of the data (blog posts) in looking for cognitive presence (Garrison & Arbaugh, 2007): 1) Students applied learning and course content outside of class and reported the results of their applications on the course blog; 2) Students contextualized their understanding of course concepts to specific instances in their “real world” observations or experiences resulting in a more nuanced and complex understanding of topics 3) Students shared specific multi-modal resources such as hyperlinks and teaching resources found online; 4) Students made intertextual connections from course content to other courses, knowledge learned in class, class discussions in the face-to-face course setting, as well as their personal experiences in their blog posts and comments; and 5) Students were metacognitive (Flavell, 1976) in making sense of their understanding of course concepts, sharing thoughts, and adjusting their definitions of their emerging understanding of course content.

Applications of Learning Outside of Class

Across blog posts from the entire semester, students reported instances of trying out knowledge, or, bringing declarative knowledge into the realm of situated and applied knowledge (Snow, Griffin, & Burns, 2005). In Blog Post #7, in early March, 2009, a representative excerpt from a student’s post shows a more nuanced understanding of the text reading and how it applied to their tutoring of a student:
In my volunteer work I actually had the opportunity to do what Ch. 6 McKenna and Stahl is [sic] talking about…Anyways I am tutoring a first grader who is struggling with reading. In our last session I had her read over a list of 100 high frequency words.

In this way, students progressed, generally, from more textbook-centered posts in the very beginning to more complex posts where knowledge was applied, towards writing with a contextualized setting and application in mind. Students even applied the learning about strategic reading instruction to their own learning in higher education settings and reported this on the blog. Another student shared such a personalized application:

Another thing that I found interesting in this chapter; was the summary writing. Barbara Taylor’s five-steps in writing coherent hierarchical summaries are most helpful….I’m applying this to my own reading comprehension strategies for my [another course]. The text is overwhelming and I think this will help me to be more successful with breaking the material down and getting the main idea. (Blog Post #7)

Overall, students were able to connect their learning to specific applications and contexts beyond the textbook readings.

Resource Sharing

Students specifically engaged in problem solving by sharing information they found that would support another student’s “plea for help”. Students, for instance, shared their specific case study scenarios and asked their peers directly for ideas for facilitating success in their case study assignment (tutoring a child one-on-one) for specific curricular ideas and materials, again, fostering a community of practice (Lave & Wenger, 1991). Some sub-themes of this type of problem-solving are listed below:

- Student sharing of hyperlinks (URL’s) with a brief description of what resource could be found at the website. Students often provided an evaluation of what they located and how beneficial they felt it was to their application towards the case study assignment and their related tutoring experience.
- Intentional sharing of resources from other courses. Students referenced resources from another literacy course.
- Sharing and reporting of knowledge gleaned from field observations related to another course. For instance, a student shared what she was seeing in a field observation as well the link where others students could seek further information: “My mentor teacher told me that they use a Developmental Reading Assessment to determine students reading level. Each small group is done by the level of the students and she gets her books for students from: http://www.readinga-z.com” (Blog Post #3)

Interestingly, students began sharing more links to outside resources that pertained to literacy assessment and literacy teaching in early March, when the case study assignment began and the course shifted more from a “textbook” focus to more of an application focus. Overall, by sharing their resources and suggestions, students were able to provide teaching ideas collaboratively amongst themselves; some students mentioned that they would be following other’s advice, thus, expanding the amount of resources that could be learned beyond the textbooks and course lecture. One student shared, “You have a great list there about some of the activities that we can use for our students in our classrooms. I know I will be utilizing most if not all of them.” (Blog Post #6).

A related theme to resource-sharing was “information-seeking”. For example, students posed questions to their peers where they sought out further information and looked to classmates
on the blog for some type of advice, resources, or general ideas as they engaged in the practice of tutoring and assessing a student. This was especially apparent from Blog Post #7 and #8 forward to the end of the semester. Similarly, students also engaged in “advice giving” where they provided direct advice (both solicited and unsolicited) or “cautionary tales” to classmates. One student shared:

*I thought that it would not really matter if I spent a lot of time organizing. WRONG! I learned from experience that taking that extra 10 or 15 minutes to get organized and plan out what I want to do in the session actually saves time in the long run.* (Blog Post #10)

**Contextualized Understanding to High-Interest “Real World” Topics**

Students found certain course topics problematic, such as the topic of how standardized testing differed from the notion of informal assessment in the classroom. Students engaged in a nuanced online conversation about this “real world” topic in the communal blog space while also debating the complexities of the advantages and disadvantages of standardized testing. The online blog conversation was one where diverse viewpoints were shared. Another topic that generated interest was the topic of “round-robin reading”. This is a traditional teaching practice where elementary or secondary students read aloud one at a time. Students generated much dialogue in Blog Post #7 about their own experiences with round-robin reading in school and what they thought were better alternatives to this teaching practice. Discussions on both of these topics on the blog were extensions of conversations begun in the face-to-face setting. A representative quote about the round-robin reading topic from Blog Post #7 follows: “I wanted to focus on our discussion last night of round-robin reading. I really enjoyed that topic because I felt like I learned a lot about why not to use the technique and alternatives to use in my classroom.” (Blog Post #7)

**Intertextual Connections**

In their blogs posts and comments, most students made intertextual connections (as defined by Lemke, 1992) from the course to other courses, some course readings, and readings from other courses, as well as connections made to their field placements and case study. Intertextual connections can be thought of as the following, as described by Jay Lemke, “Every text, the discourse of every occasion, makes its social meanings against the background of other texts, and the discourses of other occasions.” (1992, p. 257) There were several types of intertextual connections made across blog posts. Because many of the semi-structured prompts provided by the instructor (see Appendix for a representative example) encouraged or required students to draw on the textbook readings and/or the multi-media content provided in the blog prompt, nearly all students made connections to the said textbook and/or multi-media content, as required. In addition to providing their commentary on the textbook readings, students made the following intertextual connections in their posts and comments: 1) connections from course content to personal narratives or personal schema as a way to understand concepts; 2) connections to knowledge from other courses they were concurrently taking or had previously taken and 3) connections to experiences such as observations from a field experience placement where they had the chance to observe some of the ideas relating to the course topic of literacy assessment as it applied to teaching practice.

As students participated in their field observations, they shared this knowledge and wove it into their posts. In this way, they provided sense-making for their own understanding and
connection to practice, but also provided insight for students who were not in that particular setting. Some examples of intertextual connections follow:

- “I have learned from last semester to find ways to keep the children’s attention and try to make it fun.” (Blog Post #1)
- “Today, as well as last week, I observed in a kindergarten classroom. It was really neat to see some of the things we have been talking about being implemented in the classrooms.” (Blog Post #4)

Additionally, some intertextual posts contained multiple instances of connections made. For example, in the following quote, the student makes connections to a course from a previous semester as well as to a connection related to learning from the face-to-face setting from the course. This indicated the student was drawing on multiple sources of prior knowledge when making sense of course material:

After learning about literacy assessment last semester and discussing it in our first class I have come to realize that there are many other ways to assess and child to make sure they know how to read and write and that they actually understand the material. (Blog Post #1)

Overall, students made complex connections across blog posts and drew upon multiple sources of information, including the face-to-face settings when composing blog posts and commentary.

**Metacognitive Posts:**

**“Thinking Aloud” about Emerging Understanding**

Throughout the posts, and especially at the beginning of the blogging experience, many students wrote about their emerging understanding of course content. Because the course content was largely new to many students and the class size was fairly large in the face-to-face course, the main advantage of the blog—besides resources sharing—was the chance to provide a forum where all students could participate in sharing their thoughts, beliefs and responses to the readings.

First, across the blog posts students were metacognitive, or aware of their own thinking and their sense-making (as defined by Flavell, 1976) as they attempted to make sense of concepts and what was beginning to make sense to them. Students noted when they were having difficulty understanding course content and stated this explicitly in their blog posts. They expressed when they had a limited understanding of a topic and had more to learn about a topic. They engaged in self-monitoring and self-assessment as they read the course materials. Some students posed questions about areas in which they sought further understanding. They also shared changing definitions that were transformed as they made progress in the course and especially as they made connections to their experiences in real classrooms and in their work for the case study assignment for this course where they tutored an individual student in the area of literacy instruction. In writing research memos (Miles & Huberman, 1994), I noted that by reading through student posts on the blog, I was able to use students’ written blog comments and students’ self-reported understanding as formative data of what course topics in the textbooks engaged them and which topics they may have found confusing. Examples of sense-making and metacognitive postings by students follow:

- “Phonemic awareness has always been a little confusing for me up until now. The book gives great examples of how to assess students.” (Blog Post #3)
- “Everything we are learning in class is really starting to come together with seeing
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in it videos and reading about how other people have experienced it in the classrooms they are observing.” (Blog Post #5)

In conclusion, regarding the cognitive presence (Garrison, Anderson, & Archer, 2001; Garrison & Arbaugh, 2007), overall, there was a variety of types of posts and comments ranging from more analytical to more emotional and affective posts and comments such as the overly personal responses and purely unsubstantiated opinion. However, overall, most students connected what they said to some type of background knowledge either grounded in experience(s), other knowledge sources, or specific texts. An emerging ability to connect theory (course content and topics) to practice was present in many of the blog posts. This provided an initial footing for students on which to connect face-to-face class discussion to the blog posts as well as extend on topics that were more nuanced and complex in scope, for instance, in the discussion and viewpoints expressed relating to the topic of standardized testing. By connecting their course topics to multi-faceted experiences and knowledge students were able to discuss topics well beyond the scope and limitations of the face-to-face setting.

Social Presence in the Course Blog

In this section, I describe the social presence that permeated some of the student blog posts. As defined by Garrison & Arbaugh (2007), the social presence is a crucial component of the computer-mediated communication. It serves to facilitate communication when engaging in the cognitive presence or problem-solving scenarios in online settings; according to Garrison & Arbaugh (2007), social presence includes the ability for students to take risks in sharing and express themselves in social capacities. The social presence as seen in the student blog posts and comments included the following key themes: 1) Students expressed appreciation and thanks for the idea sharing with each other, building a community of practice (Lave & Wenger, 1991) and a Community of Inquiry (Garrison & Arbaugh, 2007); 2) Students recognized and empathized with one another when they weren’t fully understanding course ideas and had anxieties related to future teaching and understanding of course content; and 3) Students were envisioning towards their future teaching and projecting an identity of their professional self into the shared discourse about teaching and assessing that took place in the blog setting.

First, students expressed direct statements of gratitude and thanks towards their peers for sharing information, enhancing their understanding of course content and concepts, and sharing of anecdotes/narratives that related to experiences and observations of teaching-related scenarios. The following are statements that expressed this sentiment:

- “I have the same questions and concerns as you do.” (Blog Post #1)
- “Thank you for the insight!” (Blog Post #1)
- “I think it’s so neat that we have such a strong bond between all of us Education majors- keep posting hands-on experiences, [sic] this is great stuff! (Blog Post #3).
- “It’s amazing to hear all of the different activities that can be implemented for alphabetical and phonological development. I was thinking too that you could even implement that into the other curriculum.” (Blog Post #4)
- “It is comforting to know that someone else agrees with me regarding the negative aspects of Round Robin Reading.” (Blog Post #7)
- “Thank you for mentioning Barbara Taylor’s five steps to writing summaries for hierarchical summaries. I need to practice on doing this for our [name of another course] class also.” (Blog Post #7)
Students were inspired to try out other’s ideas in their case study assignment. One student shared on a blog post early in the course:

*I want to be able to do what you did with the boy in your tutoring session. I want to be able to see the difference between if they are reading for meaning or for testing. This is something I cannot wait to see and try for myself. I want to encourage you to keep it up and focus because it sounds like you will be awesome at what you are doing! Thanks for sharing.* (Blog Post #4).

Another student, later in the semester, also expressed that she was inspired to try out a peers’ idea and was grateful to have had the shared resource:

*The website you gave, http://bookwizard.scholastic.com is GREAT! I really needed some help with books that are on a certain grade level. The website can be specific or broad and it gave me 5 pages of books. I am really excited to go to the library and check some of these out to try with my first grader in my case study. Keep the websites coming! I write them down for future reference and I think many of them are very helpful.* (Blog Post #8)

Second, students, especially at the beginning of the course and in their first few blog posts, expressed anxiety about understanding course concepts, about being able to properly assess students in their future classroom, and other concerns about teaching in general.

Third, most students, as novices in the field of teaching, were in the process of forming their identities as future teachers. They expressed this anticipation of having their future classrooms across many of the blog posts. Some of their posts were contextualized by a framing of their learning as it applied to them as future teachers. Examples include the following:

- “In the future classroom I will have a variety of text available because each child may be at a different level and may enjoy a variety of different books.” (Blog Post #2).
- “Even so, I am beginning to feel a lot better about going into the classroom to teach, especially after observing real teaching in action.” (Blog Post #5)

Essentially, students provided a great deal of peer-to-peer support regarding course topics, and, later in the semester, support to each other as both university students and as future teachers.

**DISCUSSION**

In using asynchronous (not taking place in real time) technologies such as blogging combined with viewing of embedded videos (via YouTube) and podcasting, students engaged in a shared “community of practice” (Lave & Wenger, 1991) centered around lesson plan design, literacy assessment topics, and teaching practices and scenarios. This community and knowledge construction was not otherwise possible when only teaching and learning in face-to-face classrooms on a university campus. The communal course blog in this literacy assessment course in a teacher education program at a large university served as a place to encourage students to pose questions to each other and to compare their prior knowledge with their ongoing and possibly emerging understandings about the complex topic of classroom literacy assessment.

This Community of Inquiry framework (Garrison & Arbaugh, 2007) seemed especially useful for noting teacher presence and social presence. The cognitive presence was trickier to examine and analyze as it was often interwoven with the social presence. The subject of this literacy assess-
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ment course posed new information and content to students, many of who had little to no experience in working with children in an applied setting as required by the nature of the class. Many of their initial posts reflected this anxiety of being responsible in the near future for a roomful of children and having to know and practice the what, why, when, and how of literacy assessment. As such, pre-service teachers benefited from a support system that offered not only declarative knowledge about literacy instruction (Snow, Griffin, & Burns, 2005) but also the social and affective components of being supportive to one another through an online social presence (as described by Garrison & Arbaugh, 2007). This communal course blog served in these capacities of social and cognitive presence; however, the cognitive presence was more limited in that students drew more on their experiences and personal narratives in seeking out resources and advice to their fellow students.

The teacher presence needed to be developed much more strongly in order to better intentionally model using research-based and evidence-based approaches towards teaching practices. Implications include further seeking ways to help scaffold these evidence-based approaches in an online forum. For instance, the instructor can provide and demonstrate concrete ways for students to “lend” this support to each other by designing specific prompts students can use to be helpful while also connecting to research and evidence-based practice. One idea might be, frontloading the students with examples and direct instruction of what it means to connect literacy assessment to research and evidence-based practice. Students could also self-assess their own blog posts according to a rubric that required them to connect their thinking to course readings, research, and descriptions of evidence-based practice. Because students were making intertextual connections in their blog posts, instructors in cohort-based programs should intentionally learn about the other instructors’ courses who teach related content in order to foster such intertextual connections across courses and subject areas.

Academic and research implications of this study include continuing to focus on seeking ways to use asynchronous learning tools such as blogging to foster reflective thinking and knowledge sharing in both face-to-face and online courses. Research can seek students’ input and feedback on the blogging experience through additional measures such as surveys and focus group interviews. The limitations of this study include the idea that data was collected only from the blog postings themselves. The instructor will continue to reflect on the ways that the Community of Inquiry Framework (Garrison & Arbaugh, 2007) provides an intentional and purposeful way to design and facilitate computer-mediated-communication to support learning in blended learning contexts.

REFERENCES


**KEY TERMS AND DEFINITIONS**

**Asynchronous Learning**: The type of learning that occurs in online settings whereby learners do not have to respond in real-time; learning can take place at the learner’s own pace within structured parameters, for instance, deadlines and prompted online discussion.

**Blended Learning**: A learning context where students may participate in both on-campus (face-to-face) learning settings as well as online learning settings.

**Blog**: An abbreviated term to describe a web-log or an online journal that is written in reverse chronological order and allows for interactive online discussion through posting of comments.
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Cognitive Presence: A focus of an online learning experience where students are engaged in problem solving and other cognitive tasks.

Communal Blog: An online weblog where participants are all posting and commenting to one centralized blog rather than their own individual blogs.

Community of Inquiry: An online learning community where learners engage socially while exploring the cognitive dimension of inquiry, for instance, by problem-solving together in an online forum.

Community of Practice: A reflective and supportive learning community where learners are working towards shared learning goals; this often involves more experienced learners assisting more novice learners in their practice.

Intertextuality: Knowledge that makes explicit connections across texts including diverse mediums such as textbooks, audio files, references to other learning contexts, and other sources of information.

Social Presence: A focus of an online learning experience that intentionally fosters social support such as building community and interpersonal interactions beyond academic learning tasks.

Teacher Presence: The intentional design of an online learning experience that fosters cognitive development of students while creating a community of supported learning.
APPENDIX: EXAMPLE OF A SEMI-STRUCTURED PROFESSOR-CREATED PROMPT TO GUIDE BLOG SHARING

Week 2: Major Concepts in Literacy Assessment

with 60 comments

The class agenda for Week 2 is here: Week 2 Agenda.

The PowerPoint for Week 2 is here: Major Concepts of Literacy Assessment PPT.

**Please print and read the Rubric for Blogging and Service Reflections. I will go over in class.**

Click here: Rubric.

This is the blog post for Week 2. You can start posting now. The post for week one is prior to this one. Post your initial post by 11:59 p.m. on Monday, February 2. Comment on at least one other post by 11:59 p.m. on Wednesday, January 28. Topic 2 will be closed for posts and comments at 11:59 p.m. on Wednesday, February 3. Please be sure your initial post is 2-3 solid paragraphs; your writing should be reflective and thoughtful, not shallow or superficial, and show a connection to the readings.

This link (click) goes to a searchable database where you can see just about every common assessment available for reading assessment. Most schools primarily use TPRI, DRA, and Flynt Cooter reading inventory to assess reading. Here is also an (optional) intriguing link about what assessments are mandatory in our surrounding states, including Texas.

The post topic is the following:

What are the major tools and domains of literacy assessment and how do you envision using them in your future classroom? How can literacy be used to inform instruction? That is, how will the day-to-day formative (ongoing) assessments you will do in the classroom help you to actually plan meaningful instruction and lesson plans that will maximize literacy learning and achievement for your students? (This question is the “big question” of the entire course!).

You can also respond or connect to both the readings and/or the links and podcast (highly relevant on his concerns for “over-testing”) below.

Optional Links:

- Texas Primary Reading Inventory (given to K-2 children in Texas several times a year to screen for dyslexia)
- Released TAKS tests
- NAEP Reading Test (national)
- Podcast by Dr. Peter Afflerbach on reading assessment.

This link goes to a really great site on emergent literacy assessment, one of our course topics. It has short videos on it, as well of each type of assessment: Early assessment tools.

Written by peggys. Edit.

January 24th, 2009 at 1:51 pm
Chapter 13
Using Technology to Enhance Teacher Preparation Field Experiences

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ABSTRACT
This chapter describes a field director’s revision of a field experience placement system and model for a teacher education program at a two-year institution. In this case study, the field director documented the conversion from a paper system to using a learning management system to support the field experience process of 324 students. Results from this case study indicate a positive correlation between the components of the process and the features of the learning management system. In addition, findings from the case study reveal that the learning management system provides additional benefits for program assessment. The conversion of a paper system to a learning management system is documented as well as the implications for other aspects of teacher education assessment.

INTRODUCTION
Teacher education is a dynamic field of study that bridges theory into practice. This application manifests itself in the teaching continuum through methods courses and field experiences. The National Council for Accreditation of Teacher Education (NCATE) defines Field experience as a variety of early and ongoing field based opportunities in which candidates may observe, assist, tutor, instruct and/or conduct research. Field experiences may occur in off-campus settings such as schools, community centers or homeless shelters (NCATE, 2008). Field experiences are a cornerstone in preservice teacher education programs and they are encouraged to occur early and often.

What is a Field Experience?

As a part of the discussion of field experiences, the research literature speaks to different types of field experiences for preservice teachers’ field experiences are dictated by conceptual frameworks of the program accreditation requirement and the nature of the courses to which they are tied. Field experiences are an institution in preservice
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teacher education programs today. Moreover, early teacher educators have found merit in the “learning by doing” approach as early as the mid-nineteenth century (Cruickshank & Armaline, 1986). Parallel to John Dewey’s emphasis on experiential education, field experiences today are focused on providing examples of best practices and pairing students with teachers who are not only exceptional teachers, but also first-rate role models willing to connect in reflective practice with preservice teachers (Posner, 2005). “Learning to teach effectively requires that students access the minds, not only the observable behaviors of effective teachers” (Ethell & McMeniman, 2000, p. 87). Educational reform efforts have caused both accrediting and professional organizations to cultivate standards that expressly refer to and affect early field-based experience (Hurst, Tan, Meek, & Sellers, 2003).

Effective teacher education programs recognize the importance of field experiences in preparing preservice teachers to be successful in their potential careers. McGlinn (2003) stated that field experience is one of the most common “real world” learning experiences implemented in schools of education across the United States. Many preservice teachers believe that field experiences provide the only “real” learning in their teacher education programs. The importance of including field experience early in the preservice teacher’s experience and scaffolding experiences in later coursework allows them to understand the challenges and necessary problem-solving skills innate in teaching. These experiences permit them to make the correlation between the content learned in coursework and real-life experiences in the classroom (Darling-Hammond, Hammerness, Grossman, Rust, and Shulman, 2005). Learning to make these connections amplify the likelihood that the theories, concepts, and skills learned in coursework will be committed to memory and used later on as they begin their teaching career (Bransford, Darling-Hammond, and LePage, 2005).

Ross, Hughes and Hill (2001) performed a study of 68 preservice teachers registered in three different sections of a mandatory educational psychology course. These researchers investigated the preservice teachers’ understanding of educational concepts when links to real-life classroom use were integrated in instruction. The results of this study found enhanced understanding occurred when the alliance of educational concepts to application in K-12 school classrooms was made. The results of their study revealed that field experiences could produce quantifiable improvement in understanding explicit course content. Equally important to having essential content knowledge and skills for teaching, is the notion that preservice teachers should understand the importance of reflective and evaluative behaviors. The employment of these higher order thought processes lead them to learn from their teaching so that it repeatedly improves (Bransford, Darling-Hammond, and LePage, 2005). The amalgamation of coursework and field experience provides possibilities for preservice teachers to become conscious of the value of these practices.

According to Moore (2003), field experiences hold great potential for providing candidates with the opportunity to practice decision-making through reflection and evaluation. In her study of 77 preservice teachers enrolled in a 3-week field practicum straddling three successive semesters, Moore sought to determine how classroom field settings affected the learning process of preservice teachers. Moore noted that university instructors teach preservice teachers about the instructional settings they will come across in the classroom and through reflection. They are able to examine classroom situations in order to make suitable decisions. An important implication of the study was the need for preservice teachers, their supervisors, and their mentor teachers to scrutinize and communicate the rationale following many decisions. A suggestion by the researcher was the need to develop more field experience opportuni-
ties preceding student teaching in which regular reflection focuses on classroom settings.

In all probability, the most worrisome time for novice teachers is the first day of school. Devoid of an opportunity to experience this event and ponder upon their observations during teacher preparation, the novice teachers could start the New Year off ill equipped. An unstable start the first day of school can affect the classroom setting for the rest of the year. A field experience at the beginning of the school year gives preservice teachers an opportunity to see how classroom schedules and routines are recognized and put into motion. This is how teachers get to know their students and build an understanding of their families and communities; and how prior planning for instruction and procedures enhance classroom management (LePage, Darling-Hammond, Akar, Gutierrez, Jenkins-Gunn, and Rosebrock, 2005).

Ingersoll (2003) suggested that discernment of the issues beginning teachers face and how we might sustain them during the early years of teaching could be a practical measure for nurturing those recent to the profession. Darling-Hammond (2006) suggested that future teachers have more genuine experiences to allow them to manage the challenges and diversity of today’s schools and classrooms. Teacher education programs concur and recognize the need to provide field experience opportunities.

The Role of Field Experience

The role of field experience in teacher education is essential to reflective behavior in theories of teaching and learning. The research offers many perspectives of the role early field experiences play in making teachers according to the literature early field experiences are used to serve many purposes for teacher education students, teacher educators, and teacher education programs; as well as the prekindergarten grade 12 community partners. Various advantages of field experiences in teacher preparation programs have been acknowledged in the literature. They encompass helping students decide if teaching is the proper career choice, providing an chance for students to exercise skills prior to student teaching, helping preservice teachers start regarding themselves as teachers, and improving preservice teachers’ attitudes concerning matters of teaching (McIntyre, 1983). Field experiences are also usually offered in combination with a methods course as a way of helping students to better comprehend the conceptual and theoretical knowledge being posed. Early field experience (EFE) includes the range of school experiences that transpire prior to clinical internship for those students in preservice teacher education (Guyton & Byrd, 2000).

In an early field experience, cooperating teachers serve as exemplars that lead prospective teachers in the application of theory and instructional approaches introduced in methods courses (Anderson, Barksdale & Hite, 2005). The objective of such apprenticeship experiences is for preservice teachers to develop and practice their pedagogical skills, in part through close inspection of the cooperating teacher. Of late, much attention has also been paid to the role that field experiences may possibly play in helping preservice teachers ascertain how to efficiently integrate technology into their teaching practices (Bahr, Shaha, Farnsworth, Lewis, & Benson, 2004; Dawson & Dana, 2007). These outcomes of field experiences are clearly gainful and draw attention to the significance of field experiences in teacher education.

While field experiences are clearly a beneficial component of teacher education programs, issues surrounding their performance may influence the value and impact of field experiences. Of chief concern to teacher educators is the fact that potential teachers may not be mentally prepared to gain from experiences in the field, specifically when they appear early in their education program. When student teachers are not completely equipped to learn from experiences in the field, they every so often picture the field experience as
an off-campus activity as opposed to apprentice training, and believe that the field experiences do not buttress “real teaching experiences” (Aiken & Day, 1999).

Research has much to say about the power and responsibility of field experiences. Ewart and Straw (2005) found supervising teachers stated that this long-term, preservice field experience effectively socialized teacher candidates into the teaching vocation, equally in the classroom and the school. They illustrate the strategies they used to scaffold teacher candidates into teaching. Successful scaffolding techniques are located within the structure of a comprehensive field experience. Marilyn Cochran-Smith (2000) clearly put into words other teacher education certainties. One certainty “elevates the practical knowledge that very competent and experienced teachers have as it is grounded in outstanding practice, including the sound decisions and professional judgments teachers make as they construct curriculum and work within the uncertain contexts of daily life in schools” (p.15). Teachers develop their practical knowledge through experience and reflection aided by more veteran mentors.

Retallick and Miller (2005) studied eighty-two agricultural teacher education programs and found that the most customary purposes expressed in these documents were professional exploration and observation. Secondary principles of early field experiences were instruction and supporting the lead teacher in the classroom. A major finding of this study was that over three-fourths of the programs refer to observation as both an objective and an endeavor. Hughes (2009) deduces in her study that

Similarly, involvement in structured field experiences with an integrated reflective component will enhance the preparation of students as they enter into their teaching experience. Training for fieldwork with specific focus on reflective thinking is a way to bridge that gap between theory and practice. Further, training in classroom observation assists student teachers to organize their thoughts and make sense of teaching and learning concepts. Such reflection and inquiry promote a model of learning that views teaching as an ongoing process of knowledge building and is adaptable to teaching contexts.

Kim (2011) found that:

... early childhood preservice teachers possess relatively strong beliefs about DAP. Preservice teachers who were further along in the teacher training program demonstrated stronger DAP beliefs than teachers who had just begun the teacher-training program. Similarly, teachers who had undergone more field placements reported stronger beliefs about DAP.

Liakopoulou (2012) explored the role of field experience in preservice teacher preparation, and specifically to what degree and under what circumstances field experience contributes to developing the capability of teachers to investigate and assess the teaching process. One initial inference coming from the research is that student teachers find it difficult during their field experience to ruminate on their teaching and when they do so, their reflection concentrates on very explicit topics, and is primarily utilitarian in nature. Tarman (2012) investigated how of a group of future teachers’ beliefs and perceptions about teaching (as a vocation) change as they finalize a teacher education. The findings denote that field experiences gave the future teachers the chance to adjust their self-perceptions about a career in teaching.

Eisenhardt, Besnoy and Steele (2011) designed a framework of assignments requiring the preservice teachers to collect data about two distinct elementary students in their assigned elementary classroom during the twelve weeks of their practicum. The preservice teachers engaged cognitive dissonance as some of their predetermined ideals about students and teaching were at odds with their field experiences. The findings indicate that cognitive dissonance between their beliefs and field experiences ensuing in reasonable beliefs...
about the connection between understanding of students and appropriate instruction, hypotheses about students who were nothing like them, and connotations for future teaching.

**Types of Field Experiences**

**Professional Development Schools**

School-university partnerships, such as professional development schools, have been talked about in research literature for more than the last ten years. A venerable objective for many teacher preparation programs is to connect theory to practice for preservice teachers through allied university-school partnerships (Barkesdale-Ladd & Rose, 1997). The field-based experience provides teacher candidates with more opportunities to successfully apply what they are learning within the milieu of the classroom (Hillman, Bottomley, Raisner, & Malin, 2000).

Capatano and Huisman (2010) investigated a Community Based Model (CBM) field experience. As accounted in the surveys collected after each activity of the CBM, preservice teachers replied that completing activities that explicitly gave them experiences in the community, working with children, families, classroom teachers, and interacting with teacher preparation faculty. This also assisted them finding merit in the community and encouraged to consider the child as a whole when reflecting on the notion of teaching (Koerner & Abdul-Tawwab, 2006). What they learned in the CBM helped them take apart suppositions about poverty and the community where the children resided. This aided them in growing abilities as teachers in urban learning environments.

**Service Learning**

Service learning is a method of encouraging student learning and development through active participation in thoughtfully organized service that is conducted in, and meets the needs of, a community. It involves an elementary school, secondary school, institution of higher education, or community service program, along with the community. It helps foster civic responsibility. It is integrated into, and enhances, the academic curriculum or the educational components of the community service program in which the participants are enrolled. It provides structured time for students or participants to reflect on the service experience (Environmental Protection Agency, 2000).

It is also important to note in order for a field experience to be considered service learning it must be designed in ways that are receptive to the needs of the society. Often, the nature of service learning experiences deviates from more conventional field experiences as conventional placements tend to be arranged based on the needs of education faculty rather than a reaction to the needs of schools, educators, or learners in a community.

The budding power of service learning becomes transparent in the fact that these learning experiences can benefit everyone involved, not just aligning only with the needs of our teacher education candidates, which makes it more likely for long-term relationships and collaborations to develop. They have the promise to result in genuine collaboration with assorted stakeholders. This requires participation in discourse, collaborating differing perspectives and main concern, and constant focus on the conflict and complications experienced in the realm of the teaching (Boyle-Baise, 2002). They also aid schools and teacher education programs to achieve more than they could in isolation, resulting in better quality learning for everyone. Research on service learning indicates these touted benefits have actual promise (Eyler, Giles, Stenson, & Gray, 2003). In addition, scholars have found that service learning experiences often positively impact participants' insight of the intricacies of the field and their skills to
problem solve and think decisively while resulting in instructors’ approval with the level of learning that takes place (Eyler, et al., 2003).

One approach for developing the practice of service learning is to encourage the adoption of service learning as an instructional strategy for educator preparation. According to Anderson and Erickson’s (2003) study, about 59% of all teacher education programs provide preservice teachers with opportunities to learn about service learning as an instructional approach. Only about 24% of the programs provided teacher candidates with chances to participate in service learning and about 18% allowed teacher candidates chances to create lesson plans using service learning. About 20% assigned teacher candidates for internships with teachers experienced in the ways of using service learning effectively.

Marchel, Shields & Winter (2011) studied preservice teacher service learning and found that frequent service visits unmitigated over time, occasions to develop relationships at placements, and believing that an individual makes a difference with preschool through high school (P–12) learners were connected to advantageous disposition results. Further indications for course design fundamentals comprise providing activities to help preservice teachers understand field issues, as well as supporting a good tone with between preservice teachers and learner needs. Finally, this means making the character and responsibility of change agents an ingredient of the training and evaluation procedure. In summary, service learning field experiences have great promise to enhance teaching and learning but also require meticulous design to impact professional teaching dispositions.

Bleicher, Correia and Buchanan (2006) look at carefully the effectiveness of an early field experience program for undergraduate university students, called classroom tutors in this project (CTs). They found functioning in teams amplified mutually support and resulted in increased self-assurance of CTs to both share their classroom experiences and to engage for effectively with elementary students. Elementary students’ verbal responses and work products were significant confirmations to CTs that their teaching was making an influential in student learning. In addition, evidence of students’ belief in CTs became a very crucial motivational building block in their articulated desires to be a teacher.

**Alternative Placements**

Conventional school-based field experiences may be tricky to implement and offer less-than enviable conditions for supporting reform-based strategies encouraged in the methods courses. In some cases, they simply may not be obtainable. While some instructors have turned to alternative models, many of which are held in partnership with informal or nonprofit education programs and organizations, these alternative models may not provide a background reflective of the classroom backdrop in which teachers will be required to teach. Hanuscin and Musikul (2007) researched a summer based alternative field experience programs. They conclude that Summer Kids Inquiry Program in Science (SKIPS) mirrors teachers’ future classroom settings in that it allows students to create and investigate their own instructional plans as well as handle materials for inquiry-based science within a large group context. They deduce that this event can encouragingly impact teachers’ expectations about classroom instruction.

**Laboratory Experiences**

Another type of early field placement is the “laboratory experience.” This laboratory experience, which is usually for students enrolled in a school located on a college or university campus, was created as a kind of alternative experience for teacher education programs. It was proposed to connect conventional coursework and more extensive field experiences (Metcalf & Kahlich, 1998). Wasburn-Moses, Kopp, & Hettersimer
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(2012) studied the interaction between early field experiences and campus laboratory placements and found involvement in this laboratory field experience seem to fortify most of the participants’ intentions to teach. Participants indicated that they learned about the distinctiveness of an effective teacher and effective teaching as well as about diversity of learners. They also notice learning about their capacity or teachers’ capability in general to make a change and that they learned about themselves from experimenting the role of the teacher. The experience in the field seemed to be constructive in that it gave students a chance to connect with diverse learners in a manner that allowed them to stay encouraged about students and their aptitude as teachers to make an impact.

Study Abroad

To tackle the vital need to get ready future teachers to endure the trials of the global world, many higher education institutions have created overseas short-term field experiences that help preservice teachers build up global perspectives and foreign language proficiency (Bodycott & Crew, 2000). Clardy and Skinner (2012) studied the labor of a predominately-white institution’s bilingual program that helps to students to become culturally responsive teachers via two study abroad programs in Mexico. They found that participation of education faculty, who have knowledge and experience in global educational issues, like as bilingual education, in planning and implementing such immersion experiences is essential if preservice teachers are to see the immersion experience as part of future role as teachers. Lee (2011), through participants’ reflections, interviews and program evaluations found that the overseas field experience not only deepened their cultural knowledge, teaching knowledge and skills, but also augmented language awareness, school language and acknowledgment of different English forms.

Paid Field Experiences

Burns, Grande and Marable (2008) studied the notion of a paid field experience in an urban school district with two groups. The researchers discovered a considerable difference between the two groups and their eagerness to teach in urban schools after graduation. The study suggests that the quantity of urban field experience is a contributing issue influencing involvement in additional urban field experiences and candidates’ ensuing contemplation of working in urban schools. If an institution of higher education is truly committed to preparing urban teachers, it should contemplate augmenting the number of hours that take place in urban school settings.

Technology Enhanced Field Experiences

Ma, Williams, Prejean, Lai, and Ford, (2008) studied a model pedagogical laboratory to impact teacher candidates’ beliefs on teaching, learning, and technology integration. Parallel with the teacher perception survey the provided, qualitative analysis of preservice teacher’s reflective journals and interviews showed that the laboratory experience did have an influence on beliefs of the teacher candidates. A number of preservice teachers commented on the principles of technology while engaging students and the intricacy and issues involved in using technology.

Paired Field Placements

In this qualitative study conducted by Gardiner and Robinson (2009), in a 100-hour urban field placement pairs of preservice teachers were placed with single cooperating teachers. Results from field notes, multiple observations, interviews, and work samples specify that paired placements endorse multiple viewpoints, led to greater conversations
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about teaching and learning, and aided the realization of student-centered learning philosophies. Notably, paired field placements have promise to cultivate and expand skills of collaboration crucial to current school reform work.

Challenges of Field Experience

Field experience is not without its problems and challenges of field experience placements is essentially broke into two over arcing categories limited placement opportunities and diverse city of placements the theories of teacher education are littered with the recurrence of field experiences being early and often research of the last 20 years supports early field experience opportunities. The question becomes how do we in the field make this happen appropriately and beneficially for all stakeholders? Lawrence and Butler (2010) found constructing meaning regarding the complexities of helping students learn is a critical component of preservice teacher education that should not be one of the last aspects of teaching on which preservice teachers focus. In light of the findings, they believe teacher educators should continue to seek ways to design learning experiences that encourage candidates to wrestle with the complexities of student learning and their preconceptions about the nature of teaching as well as other pertinent preconceptions as early as possible.

As Freeman (2010) shares her personal account of conducting field placements, she offers some of the challenges of task in terms of preservice teacher readiness for the rigors of field experience. Examples include, forgetting to turn off cell phones, inappropriate dress or falling asleep and explained to preservice teachers that in some school settings, unconventional appearance or presentation could be considered distractive to young learners in a classroom. It is sometimes difficult for teacher education students to comprehend the need for toning down personal character traits when moving from their personal life to professional existence in the world of teaching children.

Placement Opportunities

As a field director, it is very important that an analysis is provided for the types of placements offered. When reviewing a placement site there are many things to consider; for example, does the school or learning setting use Fridays for special project rewards or field trip days? This is a very important question because teacher education programs really want students to see instructional time. There are other things to consider like classroom schedules, lunch schedules, and if these times hinder students from an opportunity to be involved in the instructional practices. It is a general practice that field placements prefer morning timeframes because research tells states that that is the bulk of the instructional takes place before lunch. We must consider other things in looking at placement opportunities, especially middle and high school levels. Middle and secondary schools may possibly operate on a block or modified block schedule and preservice teachers may have a difficult time actually seeing a complete instructional block. These are just a few of the decisions that field experience coordinator must be conscious of before they make assignments in the field.

Diversity of Placements

Teachers need to have a better understanding of the cultures and backgrounds of the students in their classrooms. There are teachers who have limited experience working with students of diverse backgrounds therefore preservice teachers should have a variety of field experiences in a variety of settings. Each institution, in the many conceptual frameworks submitted as part of an accreditation process, promotes preservice teachers engagement in multiple placements. This is important so that they engage in issues of diversity. This includes students who are differently able and students who differ by ethnicity, race, gender, socioeconomic status, language, and religious affiliation that affects the act of teaching, student achievement
and develops strategies for improving student learning and the candidates’ teacher effectiveness. Preservice teachers need more contact and practice working with groups of students who are diverse as well as more incorporation of multicultural foundations in methods courses. In Irvine’s research (2003), findings reveal that even after multicultural education coursework, preservice teachers may still have low expectations and unfavorable dispositions toward students of diverse backgrounds.

In order for placements to profit preservice teachers, they should be properly designed in constructive learning environments with effective teachers and institutions. Preservice teachers, cooperating teachers, as well as administrators on all levels should be made aware of the policies and procedures. Preservice teachers should have helpful and constructive projects coupled with the observations. Everyone should have a chance for contribution in the field placement procedures and feel at ease in making suggestions for improving the process. Discourse among teacher education students, faculty, public school teachers and administrators is one of the most critical features for an effective field experience program (Freeman, 2010).

**BACKGROUND**

**Management, Data, and Field Placement**

The data management responsibility of early field experience is daunting at best. Field placement staff is responsible for extremely sensitive information connected to student’s identities; this includes birthdays, addresses, Social Security numbers, previous and or current employment, driver’s licenses, and student numbers visa information for international students as well as criminal histories. In a society where identity theft is rampant, Family Educational Rights and Privacy Act (FERPA) it is essential. The field placement office is that of gatekeeper for the protection of the teacher education student, as well as a filter for the professional development sites where they are placed. The field placement office is also responsible for verification of professional liability insurance it must verify that it is with an appropriate agency. This is a requirement by licensing agencies local education agency administration and government policies for each state. This flow of information is voluminous and requires constant attention.

This also leads us to examine how this has been traditionally managed in administrations past. Previously in this case study the college teacher education program used a paper filing system and this was inefficient and included multiple opportunities for security breaches as well as violation of the Family Educational Rights and Privacy Act (FERPA) as the system is converted so much this information be. This means storing and converting thousands of pieces of paper to be archive needless to say this warrants a conversation of what should be secure stored in destroy or scan into an electronic format. We must consider the phrase “out with the old in with the new” in considering transition time to a new format. A feasible timetable had to be developed between the summer of 2013 and start of fall semester 2013. This timeline was approximately 45 days and this would otherwise be impossible; here enters the learning management system Desire 2 Learn (D2L).

**The Implementation of Desire 2 Learn (D2L)**

Desire to learn (D2L) is fairly new and it is an online learning management system. D2L provide students with an interface for accessing the content of the online courses including syllabi calendar assignments and discussions. It also allows for
testing displays upgrades and the class list with survey features. It offers a secure environment by requiring a login process. It allows for live chat online quizzes a gradebook and email feature and ability to add content links widgets and website resources. It includes a dropbox feature individual or group lockers or shared document storage as well. Finally, it includes an e-portfolio option. The Board of Regents adopted the D2L learning management system, so it was a required used for all public higher education institutions in the state. This happened to work in favor of revamping the field experience placement process at the college.

What does the field say about the relationship between technology and supervision and teacher education?

Technology, eSupervision, and Field Placement

The notion of using technology to support field experience in teacher education is relatively new and called by several names; electronically supported, computer mediated, electronically augmented and so on. Research over last ten years sheds light on how numerous scaffold teacher preparation programs make the most of these systems in their programs. Lehman, Richardson, Bai and White (2003) researched a project that offers support through faculty development and support, the improvement and performance of an electronic portfolio system for Preservice teachers, and the use of video conferencing to facilitate distance field experiences in diverse parts of Indiana. They found the universal theme across these initiatives is links in teacher education. Faculty development allows the faculty to make connections within their own practice by using technology. The electronic portfolio system allows Preservice teachers to make correlations between their own work and the accreditation standards that inform licensure. Distance field experiences produce real associations between Preservice teachers and K-12 students and teachers in many locations of the state.

Alger and Kopcha (2009) describe the eSupervision program and report its effectiveness. They found that eSupervision supported continuous communication and endorsed reflective thinking in the field. This proposes that technology can perform a significant role in attend to the frequent critique related to the field experience. In this study, the leading topic associated with the discussion forums as an expressed sense of community support by both classroom teacher and preservice teachers. This communication afforded preservice teachers with the psychological support required to do well in the field experience while also working to update the practices of all triad members in positive ways.

When Hixon and So (2009) investigated how technology has been used to develop or substitute field experiences in preservice teacher preparation programs, they found five specific benefits. They were identified as exposure to various teaching/learning environments, creation of shared experiences, and promoting reflectivity. They also identified preparing students cognitively, and learning about technology integration. A number of limitations of technology-integrated field experiences also surfaced, to include a lack of interaction with teachers and students, limited reality and complexity, availability of relevant cases, and technical problems. In the end, they recommended that the general objectives for a specific field experience should be an area of focus when field experience selections are being investigated.

Clarken (2007) investigated a teacher preparation program that successfully employed a web-based system to proficiently provide placements for teaching internships. Clarken identifies that the program could aptly manage records of placement data, stay in contact with schools, decide requests
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for honoraria and acquire evaluation information from student teachers and supervisors in methods that can straightforwardly decode and evaluate across a number different variables.

Tools and Taking Charge

When examining desire to learn (D2L) and the field placement process the field director had to investigate the tools that would take charge of the process and take care of the information this originally began by looking at how to better serve the students during the registration process and what their needs were in terms of field experience. They had a number of needs and multiple documents see (Figure 1). Previously the faculty had been managing the paperwork affiliated with each student from five different campuses encompassing more than 25 counties in the state. That did not include the online campus in their particular

**Figure 1. Data Management Overview.** This is a simple chart that roughly details the volume of data and documents that has to be managed. These numbers are at the low end of the continuum.
locations. All of this paper landed at the feet of those in the field experiences office. With the advent of D2L, the tools advertised were matched with the needs of students, the field experiences office, and the director of field experience. The learning management system actually offered a tool or feature that matched each of the needs of the field experiences process. The survey tool gathered data about where students wanted or needed to be placed whether that was near home the employment or their particular campus. The dropbox feature was used to collect criminal background consent forms and or current criminal histories this was appropriate because all of this information is stored on a secured server within the college. The dropbox feature was also used to collect proof of liability insurance in special district information forms as each school district public-private or charter may possibly have additional requirements. This was extremely important as the school district has its own additional placement process. There are approximately 17 public school districts in which the students are placed. Last but not least, the dropbox secured the field experience verification forms and the hours completed this is where the student submitted documentation other hours at the end of the experience along with any exemption forms that may have been applicable.

Data Decisions

Once all of this information has been gathered, the beauty of a learning management system is group or course or some other variable can attach a visual in numerical accounting of data to a student profile. This is viewed from two standpoints: inflow of data and outflow of data. Inflow of data encompasses all that is previously mentioned in terms of collecting data and other information as we examine the outflow, the question becomes what should be done with the data collected in the learning management system? This question is essential for program assessment. Each feature and component provides rich data for program assessment, present goals, and future goals for the program.

Questions are generated at every turn. How many students were placed? What students requested urban rural or suburban placements? Which students requested early learning elementary middle grades or secondary setting placements? What students requested diverse placements that included English-language learners and children with exceptional needs or children and high poverty settings? The list is numerous. Other questions the surface including examining the demographics of the preservice teachers. How many of them are of a particular gender? In which age group do they fall? How many are nontraditional students or are new to the field? The next set of questions alludes to the statistics of student usage. How many resources were accessed in the learning management system? How many times did preservice teachers access the handbook registration procedures or the calendar? The survey tool in Desire 2 Learn answers these questions.

The tool offered the field placement limited options as it does not function like survey monkey or lime survey but it does allow for reports to be generated by total completed attempts as well as individual leak a completed attempts. This allows the director of field placement and assessment to collect qualitative as well as quantitative data about a range of topics to include teacher license testing information grade-point average data graduation application data intentions for a four-year institution assignment perspective choice of grade level in which to be certified, advisement feedback, and teacher certification requirements for the exit course. The entry course survey allows the field placement office to gather and review demographic data. This is a part of the data managing-data mining cycle.
CONCLUSION

The next step for this case study with D2L is all embedded in application and assessment. As a reminder, the learning management system was used for managing field experience and gathering data for program assessment and accreditation. As the learning management system will be used for three more cycles in the program assessment, more tools will be added and this will generate more possibilities and questions for teacher education. These questions will not only arise at our college, but also at any institution that will have an electronic-based field placement process or an electronic assessment system.

Edens (2000) in a study noted the constraints posed to reflective discussion by having students in multiple field sites and outlined an initiative where an online discussion group was developed to overcome this difficulty for on-campus students. Evidence, based on an analysis of postings, found that students began to function as a professional community, to ask questions and to gather data on which to reflect. She concludes that online discussion is viable for promoting reflection and additionally for linking faculty with the teachers at the field sites. Can the self-assessment feature in the learning management system be used to measure disposition? Can discussion forums be used to identify reflective behaviors during field experience and discussion about the instructional day? Can the groups feature be used to develop professionalism and collegiality among preservice teachers? Can the competencies feature be used to align field experience and course work together?

Learning management systems have limits. The current learning management system provides field experience problems and opportunity to explore the aforementioned questions. This exploration is vital to teacher education United States where it is currently under attack and scrutiny. As this case study is being written, a new version of D2L is being upgraded for the next semester. This still provides more challenges and issues not only to the case study, but all teacher education field experience programs face-to-face and online. There will be a few bumps in the road with an upgrade. In the cause of the college, this particular LMS is new. A measurable number of students struggled with the field experience registration, not because of the procedure, but because of the newness of the learning management system. This interface made it somewhat difficult for students who were not technologically competent. This put the field placement office in a position of “helpdesk” on many occasions. Fortunately, the new director of field experience had training in the D2L learning management system the year before at another institution. This was not only the case for the students, but the faculty as well. This learning management system was new college-wide. Oftentimes the director of field experience served in the “helpdesk” capacity with the faculty as well. As the faculty, staff and students become more familiar with the operations and nuances of D2L, the process should continually improve.

FUTURE TRENDS

As we look toward the future of making field experience a multifaceted phenomena with meaningful consequences, it behooves us to examine how learning management systems with further parlay in to virtual field experiences in the mainstream. Several institutions nationally and internationally, have adopted this idea. Virtual field experiences are deemed important because they necessitate site-based field experiences in the conventional meaning, schools and times available for conventional experiences restrict employed teacher candidates, and nonetheless programs want them to be exposed to specific kinds of instructional strategies. They are also advantageous because they are videoed in real classrooms with individually selected teachers who typify best practices in an explicit area of classroom events that preservice
teachers should view and critique. There is no script or editing. Why is this even important to educator preparation programs? It is important because the landscape of school is catching up with technology and distance learning.

In a 2011 study, Kennedy and Archambault provide a status report on the state of field experiences in K-12 online learning programs in the United States. Teacher education programs and K-12 online learning programs were surveyed to investigate what is being done to assist Preservice teachers for K-12 online instructional environments. In their findings, they propose that teacher education programs would profit from attending to the increasing demand to train future K-12 online teachers, and the present study emphasizes the enormity of further research in this arena. Crucial outcomes subsist for the topic of K-12 online learning as well as for teacher education programs that are engaging in developing educators for various online k-12 formats.

McFerrin, Weber, Carlsen, Willis, Gutke, & Albion (2008) also studied virtual field experiences. Specifically, they investigated several of the strong points and restrictions coupled with each field experience design. Outcomes of this study denote that preservice teachers concluding the virtual field experience spent additional time pondering on their observations than students in the conventional group, but did not believe that they got an authentic feel of what it was like to be a classroom teacher. The results of this study suggest that the strengths and limitations of each format need to be considered in relation to the goals and objectives of the field experience.

Compton, Davis and Meek (2007) examined a pilot for a Virtual School (VS) field experience. An early field experience was developed and provided in the form of a one-credit course to include approximately fifteen hours of instruction. It encompassed online instruction along with twenty hours of observation. The case examined was a science course at a high school level presented concurrently to numerous remote locations and facilitated by a master teacher using blended technologies within WebCt, a widely used learning management system.

Moreover, these early field experience modules mandated that Preservice teachers must read about multiple viewpoints of VS from the perception of the VS student, teacher and field site director from the Virtual High School website. Preservice teachers’ written reflections discovered that they had conquered misconceptions that they had about VS. Virtual field experience preservice teachers are privy to a numerous benefits according to advocates who currently use VFE. Preservice teachers see models of effective in various environments and obtain contact to classroom dilemmas, complexities, and classroom management.

They see models of reflective behavior, self-assessment, growth, professional developments implemented and hear professional terminology used in the proper setting. Preservice teachers have safe environment for impartial, crucial examination of teacher behaviors and instructional choices. Teacher candidates have the option of replaying video for reflective assignment completion and as a source for later assignments. They have contact with many types of classroom settings and bridge ideas with experience and a library of classroom demonstration videos.

They can receive targeted, standards-based experiences not commonly accessible. Teacher candidates are exposed to a broad range of diversity and teacher candidates learn that both solid pre-planning and on the spot decision-making are essential. Finally, they can see best practices enacted by effective teachers, with many skills and talents.

Enrollment in K-12 online learning is rapidly growing in the United States. Watson, Murin, Vashaw, Gemin, and Rapp (2011) shares that all 50 states and the District of Columbia make available to their K-12 students an online learning experiences. Various formats of these offerings; whether fully online, blended, or hybrid, offer all or most of a learner’s opportunities through
web-based instruction. Some states have crafted legislation mandating or recommending K-12 students to complete at least one online learning experience by the time they complete secondary education. Escalation in online learning mandates that preservice teachers master how to provide appropriate instruction in this learning environment and that educator preparation programs equip them adequately. It is extremely important that teacher education programs remain responsive to the P-12 population, the preservice teachers in post secondary programs, and the ever-fluid notion of “school.”

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**KEY TERMS AND DEFINITIONS**

**Assessment Data:** Quantified information communicating the results of an evaluative activity or task designed to determine the extent to which candidates meet specific learning proficiencies, outcomes, or standards.

**Assessment System:** A comprehensive and integrated set of evaluation measures that provides information for use in monitoring candidate performance and managing and improving unit operations and programs for the preparation of professional educators.

**Assessment:** An evaluated activity or task used by a program or unit to determine the extent to which specific learning proficiencies, outcomes, or standards have been mastered by candidates. Assessments usually include an instrument that details the task or activity and a scoring guide used to evaluate the task or activity.
**Candidate Performance Data:** Information derived from assessments of candidate proficiencies, in areas of teaching and effects on student learning, candidate knowledge, and professional dispositions. Candidate performance data may be derived from a wide variety of sources, such as projects, essays, or tests demonstrating subject content mastery; employer evaluations; state licensure tests; and mentoring year portfolios as well as assessments, projects, reflections, clinical observations, and other evidence of pedagogical and professional teaching proficiencies.

**Candidates:** Individuals admitted to, or enrolled in, programs for the initial or advanced preparation of teachers, teachers continuing their professional development, or other school professionals. Candidates are distinguished from students in P–12 schools.

**Certification:** The process by which a non-governmental agency or association grants professional recognition to an individual who has met certain predetermined qualifications specified by that agency or association. (The National Board for Professional Teaching Standards grants advanced certification.)

**Clinical Faculty:** P–12 school personnel and professional education faculty responsible for instruction, supervision, and/or assessment of candidates during field experiences and clinical practice. See Professional Education Faculty.

**Clinical Practice:** Student teaching or internships that provide candidates with an intensive and extensive culminating activity. Candidates are immersed in the learning community and are provided opportunities to develop and demonstrate competence in the professional roles for which they are preparing.

**Conceptual Framework:** An underlying structure in a professional education unit that gives conceptual meaning to the unit’s operations through an articulated rationale and provides direction for programs, courses, teaching, candidate performance, faculty scholarship and service, and unit accountability.

**Contemporary Professional Experiences:** Meaningful and structured activities in a P–12 school setting within the last five years. Examples include structured observation, working in schools as a teacher or other school professional, action research, research projects that are school-based, and participating in professional development school activities.

**Content:** The subject matter or discipline that teachers are being prepared to teach at the elementary, middle, and/or secondary levels. Content also refers to the professional field of study (e.g., special education, early childhood education, school psychology, reading, or school administration).

**Cultural Background:** The context of one’s life experience as shaped by membership in groups based on ethnicity, race, socioeconomic status, gender, exceptionalities, language, religion, sexual orientation, and geographical area.

**Curriculum:** Courses, experiences, and assessments necessary to prepare candidates to teach or work with students at a specific age level and/or to teach a specific subject area.

**Distance Learning Program:** A program in which over half of the required courses in the program occur when the learner and the instructor are not in the same place at the same time. See Distance Learning. These programs include those offered by the professional educational unit through a contract with an outside vendor or in a consortium arrangement with other higher education institutions, as well as those offered solely by the unit.

**Distance Learning:** A formal educational process in which instruction occurs when the learner and the instructor are not in the same place at the same time. Distance learning can occur through virtually any media including asynchronous or synchronous, electronic or printed communications.

**Diversity:** Differences among groups of people and individuals based on ethnicity, race, socioeconomic status, gender, exceptionalities, language, religion, sexual orientation, and geographical area.
The types of diversity necessary for addressing the elements on candidate interactions with diverse faculty, candidates, and P–12 students are stated in the rubrics for those elements.

**Ethnicity:** Physical and cultural characteristics that make a social group distinctive. These may include, but are not limited to national origin, ancestry, language, shared history, traditions, values, and symbols—all of which contribute to a sense of distinctiveness among members of the group.

**Exceptionalities:** Physical, mental, or emotional conditions, including gifted/talented abilities, that require individualized instruction and/or other educational support or services.

**Field Experiences:** A variety of early and ongoing field-based opportunities in which candidates may observe, assist, tutor, instruct, and/or conduct research. Field experiences may occur in off-campus settings such as schools, community centers, or homeless shelters.

**Full-Time Faculty:** Professional education faculty with full-time assignments in the professional education unit as instructors, professors at different ranks, and administrators. See Professional Education Faculty.

**Initial Teacher Preparation Programs:** Programs at the baccalaureate or post baccalaureate levels that prepare candidates for the first license to teach. They include five-year programs, master’s programs, and other post baccalaureate and alternate route programs that prepare individuals for their first license in teaching.

**Institutions:** Schools, colleges, or departments of education in a university, or non-university providers.

**Multicultural Perspective:** An understanding of the social, political, economic, academic, and historical constructs of ethnicity, race, socioeconomic status, gender, exceptionalities, language, religion, sexual orientation, and geographical area.

**Performance Assessment:** A comprehensive assessment through which candidates demonstrate their proficiencies in subject, professional, and pedagogical knowledge, skills, and professional dispositions, including their abilities to have positive effects on student learning.

**Pedagogical Content Knowledge:** The interaction of the subject matter and effective teaching strategies to help students learn the subject matter. It requires a thorough understanding of the content to teach it in multiple ways, drawing on the cultural backgrounds and prior knowledge and experiences of students.

**Pedagogical Knowledge:** The general concepts, theories, and research about effective teaching, regardless of content areas.

**P–12 School Personnel:** Licensed practitioners in P–12 schools who provide instruction, supervision, and direction for candidates during field-based assignments. See Professional Education Faculty and School Faculty.

**Part-Time Faculty:** Professional education faculty who have less than a full-time assignment in the professional education unit. Some part-time faculty are full-time employees of the college or university with a portion of their assignments in the professional education unit. Other part-time faculty are not full-time employees of the institution and are commonly considered adjunct faculty. See Adjunct Faculty and Professional Education Faculty.

**Professional Development Schools (PDS):** Specially structured schools in which the P–12 school and higher education faculty collaborate to (1) provide practicum, student teaching, and internship experiences; (2) support and enable the professional development of school and higher education faculty; (3) support and enable inquiry directed at the improvement of practice; and (4) support and enhance student achievement. PDSs
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require the institutional commitment of colleges and universities, school districts, and teachers’ organizations.

**Proficiencies:** Required knowledge, skills, and professional dispositions identified in the professional, state, or institutional standards.

**Program:** A planned sequence of courses and experiences for the purpose of preparing teachers and other school professionals to work in pre-kindergarten through twelfth grade settings. Programs may lead to a degree, a recommendation for a state license, both, or neither.

**Students:** Children and youth attending P–12 schools as distinguished from teacher candidates.

**NOTE:** The definitions as provided are the official definition NCATE now known as the Council for the Accreditation of Educator Preparation (CAEP).
Chapter 14
Blended Learning and Digital Curation: A Learning Design Sequence

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ABSTRACT
This chapter presents a case of successful integration of digital curation in a repeating series of blended classroom activities. Digital curation, in education, can be understood as the collection, organization, interpretation, summary, and sharing of online resources by learners on a topic of inquiry. This research reports on a blended digital curation learning design integrated into a third-year university course. A digital curation activity sequence development process and the classroom activity structure form the basis of the educational implementation presented here. In theory, digital curation activities can support the sharing of collected resources between learners. In practice, digital curation learning activities in higher education can also support blended and flipped classroom engagement models while providing opportunities for the development of critical thinking skills. The chapter describes the activities, the learning design, and the outcomes of a digital curation activity sequence. This provides other educators with a learning design roadmap for engaging students in pre-lecture activities or blended learning that adds value to classroom lectures.

INTRODUCTION
In a recent study of online learning activities (Ostashewski, 2013) students reported that building a collection of online curated resources that could be later used in their professional practice was particularly valuable. Students reported that their exposure to some of the content-focused hyperlinked websites supporting a workplace topic continued to be helpful beyond the course. Similarly, sharing of the website URLs and short annotations or descriptions of the particular value

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of those websites provided a “filtering” or “digital curation” of content for others. Digital curation is about “maintaining and adding value to, a trusted body of digital information for current and future use” (Beagrie, 2008, p. 3). A simplified definition of digital curation for education is: “the online or digital curation of content for education can be understood as the sharing and reviewing of online resources using websites” (Good, 2012). The literature supports digital curation activities as valuable learning designs for both blended and online learning (Ravitz & Hoadley, 2005). For example, resource sharing or sharing and curation of online resource is reported as a key online-networked learning activity (Wenger, Trayner, de Laat, 2011; Ostashewski & Reid, 2011; Sinha, Rosson, Carroll, & Du, 2010) and may, in fact, represent a learning design suitable for blended or flipped education delivery. In summary, the literature reports that students engaged in online or blended learning describe their joint and shared exploration and evaluation of curricular resources (e.g. materials presented to them in a course or found via researching) as valuable online learning experiences. This was the basis upon which digital curation activities were integrated into a third year business education course in one Australian university. This chapter will provide an examination of how integration of digital curation activities into a blended higher education classroom occurred and presents a learning design sequence arising from the research.

The goal of this chapter is to present a case of successful integration of digital curation as a series of weekly classroom activities. Some ways that digital curation activities can be utilized are by:

1. Taking advantage of a network of curators working for you (building your own customized network) and consuming the curated information.
2. Collecting, organizing, connecting, attributing, interpreting, summarizing vast amount of information on any topic.
3. Sharing knowledge by being the curator for others for a particular niche area of expertise or interest.

The unique implementation of digital curation activities in a university setting described in this chapter demonstrates digital curation activities can provide a method for students to prepare for lectures and critical analysis of topics. The activities are described, including the underlying learning design rationale, and the outcomes of the blended digital curation sequence are outlined in order to provide a roadmap for others looking to actively engage students in pre-lecture, flipped, or blended learning activities that can add value to classroom lectures.

DIGITAL CURATION

Blended learning often requires a considered use of one or many of the online technologies which support educational tasks and activities. Yakel, Conway, Hedstrom, and Wallace (2011) noted that with the ever-expanding collection of digital information all around us, a new generation of digital curators is needed to manage this information. Digital curation, as a process, aligns positively with the affordances of blended learning, and has been defined as an active process whereby content/artifacts are purposely selected to be preserved for future access. In the digital environment, additional elements can be leveraged, such as the inclusion of social media to disseminate collected content, the ability for other users to suggest content or leave comments and the critical evaluation and selection of aggregated content. This latter part especially is important in defining this as an active process (Antonio, Martin, & Stagg, 2012).

Curation of digital information is, according to Mihailidis and Cohen (2013), something that we have been doing in classrooms for decades. They argue that digital curation activities are
those where we have been “[i]ncorporating critical approaches to framing, bias, analysis of agendas and perspectives in the information landscape has been going on for quite some time, as evidenced by scholarship dating back decades” (p. 15). In many ways, we all participate in curation of digital information on our personal computers and devices. Incorporating meaningful activities in the classroom that are tied to learning outcomes is one way in which digital curation skills can lead to the development of a more proficient generation of information users.

A digital curation learning cycle proposed by Wolff and Mulholland (2013) which utilizes Internet-based content provides one model suitable for blended learning design. Their curatorial inquiry model is designed to support inquiry learning with the development of a digital artifact as a result of the process. Wolf and Mulholland describe the learning process as one where:

… a learner is assisted in building stories around the primary and secondary source evidence. Learning occurs through the process of developing a coherent story in response to the inquiry question and in curating the web-based source materials to reflect this understanding. (Wolff & Mulholland, 2013)

Their model presents an activity approach whereby the artifact created in the process is represented as a story. This is the same kind of artifact that is shown in museum displays, usually curated by professionals in the field, and often telling a story. The storytelling approach to digital curation activities is also reported in other literature focused on exploring digital curation in education (Antonio, Martin, & Stagg, 2012).

The seven stages of the curatorial inquiry learning cycle in the model developed by Wolff and Mulholand (2013, p. 2) are:

1. **Research:** Choose a learning goal and define the task boundaries.
2. **Content Selection and Collection:** Filtering out the bad resources and highlighting the good.
3. **Interpretation of Individual Content:** Annotate individual content to identify important points.
4. **Interpretation Across Content:** Annotate from a task perspective, finding the important relations linking content and annotations.
5. **Organization:** Organising the content and annotations in respect to an underlying coherent story addressing the learning goal.
6. **Narration:** Presentation to an audience through a chosen medium.
7. **Research/Recuration:** The process through which the audience become participants in a narrative construction based on a previously curated output. Includes reflection (the author can recurate to improve understanding).

The implementation sequence for digital curation activities presented in this chapter differs significantly from the Wolff and Mulholland model in that it incorporates a lecture or presentation and face-to-face student discussion as a key intermediate stage to the process.

**LEARNING ACTIVITIES AND DIGITAL CURATION**

There are several challenges in providing university students with active learning activities that make effective use of online resources identified by students. Some of the challenges include linking these resources to unit objectives, and providing ways for students to engage in reflective metacognitive activities centered on the related curricular outcomes (Johnson, Smith, Willis,
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Levine, & Haywood, 2011; Chen and Looi, 2007). A major concern is often one of ensuring the learning objectives are met over the course of study. One recently publicized way to engage students in active learning is to ‘flip’ classroom activities (Bergmann & Sams, 2012), requiring students to prepare for classroom discussions and presentations by engaging with unit topics prior to the classroom activities. It has also been reported in the literature that students are now coming to university expecting activity structures and designs that utilise this approach (Johnson, Adams, Cummins, Freeman, Ifenthaler, Vardaxis, and Taylor 2013) mainly due to the shift in K12 education activities towards such approaches.

The literature reports that active learning designs in university education, using flipped or blended learning models, can improve student attitudes, performance and critical analysis skills (Armbruster, Patel, Johnson, & Weiss, 2009; Meyers & Jones, 1993) and develop students’ metacognitive skills (Garrison, 2006; Garrison & Akyol, 2013). In the study reported on in this chapter, the researchers intended to evaluate an active learning flipped classroom sequence which incorporated a bi-weekly digital curation activity. The digital curation learning activity was designed and developed to engage students in critical analysis of economic policy issues linked to the unit outcomes. The goal of this research is toward the future development of a digital content curation model which incorporates active learning originating from the evaluation of the digital curation learning sequence in a third year economics unit.

Recent literature states that engaging students in meaningful digital curation activities can support the development of analytical and critical thinking skills (Gadot & Levin, 2012; Mihailidis and Cohen, 2013; Verhaart, 2012; Wolff & Mulholland, 2013). Furthermore, digital curation can be described as a system/process for “maintaining and adding value to, a trusted body of digital information for current and future use” (Beagrie, 2006, p. 3) and, online digital curation of content for educational purposes has been described as a learning activity where students share and review online resources (Campbell, 2010; Good, 2012). A number of researchers have suggested that these activities can be valuable for blended and flipped learning activity designs (Antonio, Martin, & Stagg, 2012; Barret, 2012; Miller, 2012; Ravitz & Hoadley, 2005).

THE CONTEXT: UNIVERSITY’S THIRD YEAR ECONOMICS COURSE

Curtin University is a vibrant, international organization, future focused and committed to making tomorrow better. It strives to be an international leader in research and education, changing minds, changing lives and changing the world. Curtin strives to provide a challenging and rewarding education that is relevant to current careers and workplaces. Curtin is the largest and most preferred university in Western Australia, with more than 50,000 students spread across 16 different locations, including campuses in Sydney, Singapore and East Malaysia. It is one of only two Western
Australian universities to rank in the prestigious Shanghai Jiao Tong Annual Ranking of World Universities (2012) and the Times Higher Education’s 2011-12 world university rankings.

The School of Economics and Finance is a part of one of the Asia-Pacific region’s largest multinational, multicultural business schools. The School of Economics and Finance has a cosmopolitan mix of local and international students, offering a range of undergraduate and postgraduate programs in the study areas of economics, banking and finance, financial planning and property. The school is striving towards delivering high-quality research and teaching that influences industry—for instance, the school is home to the Centre for Research in Applied Economics (CRAE). There is extensive and varied research expertise across all of school’s discipline areas, including econometrics and quantitative modelling.

One of the most popular program choices among students is the economics and finance double major, which is part of a larger program in the Bachelor of Commerce pass degree (three year duration, studying full time). This double major has been designed for students who seek careers in both the public and private sectors, whereby students acquire good analytical and quantitative skills. This course is accredited by the Economic Society of Australia (Western Australian Branch) and graduates are eligible to apply for professional membership. In the economics major/stream for example, most courses have regular (weekly) 2-hour lectures and 1-hour tutorials. Each course is typically based on a suitable textbook to aid the Lecturer’s presentation of the course materials.

The Economic Policy course is a little different to others that students typically undertake. Rather than a set text and syllabus, the undergraduate/postgraduate course comprises of a series of invited lectures from specialists (in academia or industry) in a wide range of policy areas. It provides students with a chance to apply their economics training to a range of topical economic, environmental and social issues and to engage in stimulating debates.

Students are most successful in this course when they prepare well by completing the weekly readings and other online tasks, and actively contribute to class discussions.

The course is delivered in two semesters each year and often has enrolments of around 30 to 60 students per semester (over a 12-week teaching schedule). Curtin University has a relatively large international learner cohorts and this is reflected in the activities and expectations of students. The Economic Policy course is usually made up of about 40 percent international students and 60 percent local students. Historically, the course consists of a one 3-hour seminar per week. Two segments split the time during the seminar. Invited guest speakers present on a topic of interest/expertise for about 1 hour, followed by 15 to 20 minutes of class discussion with the speaker. The second half is allocated to student presentations on the previous week’s policy topic. A reading list is not set because of the nature of the course. Instead the key references and material for each week’s topic is given to students through the Blackboard Learning Management System (LMS).

The course is designed to give students the opportunity to be active agents in knowledge creation and to learn how to apply their economics training to address key economic problems and policy issues. It is based upon lectures that provide an overview of key issues and explore selected areas in depth; as well as using blended learning technologies such as the digital curation of resources (introduced for the first time in semester one 2013); and student-based seminar presentations during the class that afford students the opportunity to research a specialized topic in-depth and generate some lively academic discussion and debate. An individual written assignment is included in the semester’s learning activities.

A range of contemporary policy and current issues are analyzed in the Economic Policy course. Topics vary from year to year and typically address contemporary policy issues. Topics include the goals and instruments of economic policy and
the principles of policy analysis, the economics of climate change, competition policy, monetary policy, productivity growth, taxation policy, the social and ecological economics of well-being, and socio-cultural issues of indigenous people. The topics discussed in the course in semester one 2013 and the corresponding link to the digital curation activities are show in Table 1.

There are four learning outcomes for this course:

1. Describe and explain key economic issues facing the Australian economy;
2. Evaluate economic policies;
3. Apply economic theory and empirical analyses to address policy issues; and
4. Research, structure and present policy analysis in both written form and orally.

Learning outcome four, 'research, structure and present policy analysis in both written form and orally', is main outcome assessed for the digital curation activities. More specifically, students are required to submit their three best activities at the end of the semester, and are evaluated (out of 10) on the extent to which they demonstrated the following skills: a) ability to think critically about the policy issue(s); b) having a perspective that takes into account various aspects of the issue; and c) presents and evaluates policy alternatives. In short, developing the students’ critical thinking skills is a key learning outcome vis-à-vis the digital curation activities.

**PROFESSIONAL DEVELOPMENT SUPPORT**

For many university lecturers, educational technologies are becoming available at such a rapid pace that lecturers often feel incompetent in dealing with these new technologies. This challenge

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Week</th>
<th>Topic Heading and Lecture (L)</th>
<th>Digital Curation Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intro</td>
<td>1</td>
<td>Introduction to Economic Policy: Theory and Principles</td>
<td></td>
</tr>
<tr>
<td>L1</td>
<td>2</td>
<td>L1. Economics of Climate Change</td>
<td></td>
</tr>
<tr>
<td>L2</td>
<td>3</td>
<td>L2. Poaching &amp; Ivory Trafficking of Elephants</td>
<td>Digital Curation 1 on L2</td>
</tr>
<tr>
<td>L3</td>
<td>4</td>
<td>L3. Is the Asian Natural Gas Market Large Enough for All? Implications for Energy Policy in Western Australia</td>
<td>Digital Curation 2 on L3</td>
</tr>
<tr>
<td>Tuition Free</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L4</td>
<td>6</td>
<td>L4. Addressing Indigenous Disadvantage: The Role of Culture</td>
<td>Digital Curation 3 on L4</td>
</tr>
<tr>
<td>L5</td>
<td>7</td>
<td>L5. Industrial Clusters and Regional Economic Policy</td>
<td></td>
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<tr>
<td>Tuition Free</td>
<td>8</td>
<td></td>
<td></td>
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<tr>
<td>L7</td>
<td>10</td>
<td>L7. Women’s Leadership Issues</td>
<td></td>
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<tr>
<td>L8</td>
<td>11</td>
<td>L8. Australia’s Federal Financial Relations</td>
<td></td>
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<tr>
<td>L9</td>
<td>12</td>
<td>L9. Monetary Policy</td>
<td>Digital Curation 5 on L9 (Optional)</td>
</tr>
<tr>
<td>L10</td>
<td>13</td>
<td>L10. Insider Trading</td>
<td></td>
</tr>
<tr>
<td>Review</td>
<td>14</td>
<td>Final Exam</td>
<td></td>
</tr>
</tbody>
</table>
is further confounded with institutions requiring lecturers to adopt new tools and techniques whilst at the same time there is a lack of professional development support (Johnson et al., 2013).

There is a need for more training before being asked to teach, and for more professional development opportunities once in the profession. This key challenge is underscored by the widespread belief that most academics are not leveraging emerging technologies for their own work, whether that be in the classroom or in support of their own research. (p. 3)

In response to this need, Lefoe and colleagues (2009) identified five strategies to support professional development for university lecturers in the implementation of learning technologies:

1. Development of a shared understanding of the theoretical frameworks and philosophies of the approach;
2. Development of understanding of the affordances of the technologies at hand, and having a significant amount of time to develop these skills before using with students;
3. Participation in authentic tasks which model the practices to assist the move from theory to practice;
4. Development of a shared language, knowledge and understanding of new pedagogies and the implications for practice and teaching role;

In the case presented in this chapter, the implementation team had the opportunity to develop the digital curation tasks over a period of four months prior to the course being offered to students. This preparation time allowed for many of the strategies Lafoe and colleagues described to be utilized. As a result, when the learning activities were presented in the fourteen-week course, the lecturer was well prepared to implement and support the activity structure.

The professional development activities, which took place over the four-month period, required careful thought and consideration due to the assessment requirements of the course. As the course had an established assessment pattern and requirements, the activities needed to result in particular assessable artifacts. Despite this restriction, the lecturer fully engaged in the process as a learner and collaborator with a team of two educational design academics. The driving motivation for the review and integration of a technology enhancement into the course came about as the result of a strategic plan focusing on employing the use of blended learning strategies and learning technologies to further enhance courses in that faculty.

The educational design process involved a series of meetings, research, and design sessions to accomplish the development of the learning design centered on a series of digital curation activities. Key to the initiation of the design was the lecturer’s willingness to explore the possibilities offered by incorporating educational technology in the course. As the need for lecturer buy-in with the process was understood to be critical, the university department also provided a small incentive to lecturers willing to embed learning designs utilizing learning technologies in their courses.

The educational design process included the following:

1. The design team of two educational designers and the lecturer met on three occasions to discuss what the course was composed of in terms of resources, topics, and learning activities. This also included an audit of the learning technologies that were already in use and overall discussions about the kinds of educational technologies the university had available. One key criterion was that the existing course assessments and learning outcomes were set within a fixed framework
and therefore the learning activities needed to reflect this framework and no change to these aspects of the course were possible.

2. The design team worked through the course activities and explored potential technologies that would engage students in peer-peer discussion. Online-based tools such as Twitter and Purdue’s Hotseat were considered. As these meetings progressed, it was determined that a pattern of activities which would support the numerous guest presenter topics – in advance of the guest presentation, as well as following the presentation – could greatly aid students in their preparation and understanding of the topics presented.

3. The team identified that the following learning activity tasks were most likely to add value to the course: reflection, sharing of online materials (URLS), and the production of an assessable artifact. The assessable artifact would allow the lecturer to be able to assess students’ critical thinking skills and understanding of the topics presented. Critical analysis of relevant topics presented in the course materials was one of the key learning outcomes.

4. Another meeting and a review of the literature in business education and use of blended or online technologies supported the discussions. The sequence of learning activities was drafted taking into account the requirements and learning outcomes to be achieved in the course. This sequence refers to the organization of the activities over the term of the course. For example, in this case it meant planning that in week 3 the lecturer would introduce digital curation activity 2, in week 4 have the guest presentation, and in week 5 students would complete the reflection and critical analysis component of the activity.

5. After developing the sequence of digital curation activities for the semester, the lecturer prepared a set of support materials for students describing the goals, outcomes of the activities, and provided detailed instructions for completing the digital curation tasks. The design team reviewed and revised the digital curation instructions and support materials for students and these were finalized for distribution to students prior to the course start date.

This design process took place over several months, and some of the outcomes of this collaborative design process included a deeper understanding of blended models of education, a critical analysis of the curation literature, and exposure to new technologies supportive of active learning. The result of the process was a learning sequence of digital curation activities that were implemented into an economics course and according to students resulted in beneficial learning activities.

**BLENDED DIGITAL CURATION SEQUENCE**

The blended learning sequence presented in this chapter is informed by literature, designed to engage students with technology enhanced learning activities, and intended to support critical analysis skill development. Figure 1 presents the details and structure of a single digital curation activity.

During the first week of the digital curation activity the topic being curated was briefly introduced at the end of the first seminar. In this economics course, the seminar session is divided into two segments, a 1.5-hour guest lecture and then a ‘tutorial’ session for 1.5 hours. The tutorial component involved students discussing and
presenting their analysis of the guest presenter topic. In addition to briefly announcing the digital curation activity at the end of the seminar, a more detailed announcement was posted to the course LMS site shortly after the seminar.

The digital curation activity sequence presented in Figure 1 incorporates three key student tasks: research, questioning, and recuration. The three tasks were described to students as the following sequence of activities they were to participate in:

1. **Before Lecture Day:** Research and make Bb post. (research)
2. **Lecture Day:** Listen and engage with the presenter. (questioning)
3. **After Lecture Day:** Reflect and make the second post. (recuration)

In order for students to be able to follow and benefit the most from the digital curation activities in the course, an orientation document was developed. This document supported the lecturer’s introduction of the digital curation activity sequence at the first orientation session of the course. Additional explanations and support relating to the structure of activities were provided during the course; however, the topic most inquired about by students related to the marking aspect of the activity. In order for readers of this chapter to be able to utilize the experience of the authors in presenting a digital curation activity sequence to students, the complete orientation document for students is provided in the following section.

**CONCLUSION**

As stated previously, there can be multiple benefits in incorporating digital curation activities into a university course. Some of these that have been reported in the literature include: the provision of meaningful blended learning activities, support of peer learning, preparation for flipped classroom style activities, and critical analysis skill development. Stanoevska-Slabeva and colleagues (2012) also note that digital curation is now also evident in journalism in the form of timely news information validation:

*Social media curation is based on the basic concept of media curation proposed by Rosembaum (2011) and deals with large corpora of content from diverse sources and connotes the activities of identifying, selecting, verifying, organizing, describing, maintaining, and preserving existing artifacts as well as integrating them into a holistic resource (Stanoevska-Slabeva, Sacco, & Giardina, 2012).*
The authors take this as a sign that digital curation is becoming one way in which networked or connectedness and sharing is also occurring in the workplace and is a valuable means for building common understanding of topics and issues supported by a current and reviewable evidence base. As one goal of university business degrees is workplace skill development, for the third year economics students, digital curation provides an authentic activity and an authentic assessment relevant to their future employment.

According to the lecturer, several lessons and key benefits of this digital curation activity became evident over the course term. Anecdotally, students reported that they enjoyed the learning activities. The lecturer of the course reported that, as the person being responsible for inviting the guest lecturer, it was good to see that the students were already familiar with the topic – having completed the Post 1 activity prior to the guest lecture. The lecturer noted that students seemed more able to participate, in terms of the questions and discussions during the digital curation weeks as compared to weeks when there were no digital curation activities embedded. The lecturer also stated that it was a positive outcome that students were ready to ask informed questions, as that in turn made the expert presenter more interested in returning in the future. In summary, the preparation aspect of the activity had real benefits for the classroom activity and resulted in an excellent outcome of a blended design structure.

Some other aspects of the digital learning activity were noted by students. When asked about the value of the digital curation activities students commented:

- The DC (digital curation) exposed me to different policy resources prior to class, which enabled me to be less restricted to participation (views) on different policies presented
- Going to class and actually knowing what is being discussed, DC (digital curation) forced prior reading meant we could engage in discussions and understand presentations

Students further indicated that the digital curation activities also supported the development of their critical thinking skills, analysis skills and research skills. Overall, the benefits of the digital curation design supported student learning outcomes both internal to the course as well as more global skill development.

The intention of this chapter has not been to provide a fixed step-by-step description of the digital curation process and its incorporation into courses. Indeed, we do not prescribe to the view that there is a single way of achieving these kinds of learning outcomes. Nor do we hold the belief that technology should simply be ‘added’ to a pedagogical approach to make learning more up-to-date. Instead, we have presented one example of a learning sequence, supported in the literature, on how to incorporate a blended digital curation activity into a course design.

In conclusion, the authors recognise the professional learning curve can be a steep one for many university lecturers seated with the important task of preparing a workforce for the future. This is especially true in a world in which rapid change is likely to continue and whole ranges of technologies embedded in the workplace are yet to be developed. As described by Sharples, Taylor and Vavoula (2007): “A world in which children own powerful multimedia communicators and where they practice new skills of online file sharing and informal text communication does not fit easily with traditional classroom schooling” (p. 241). Lecturers in universities need to be encouraged to continue to engage with technology enhanced learning activities, in order to prepare students for the challenges of their future workplace.
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Blended Learning and Digital Curation


KEY TERMS AND DEFINITIONS

**Blended Learning:** Face-to-face learning that incorporates some online-based activities as part of the educational experiences.

**Digital Curation:** In general is about “maintaining and adding value to, a trusted body of digital information for current and future use” (Beagrie, 2006, p. 3). For education “the online or digital curation of content for education can be understood as the sharing and reviewing of online resources using websites” (Good, 2012).

**Educational Design:** The sequence of instructional activities planned to be delivered in an educational or learning event.
**Educational Technologies:** technologies that can support learning or learners during educational events.

**Flipped Classroom:** Classroom activities requiring students to prepare for discussions and presentations by engaging with course topics prior to the classroom activities.

**Resource Sharing:** Sharing and curation of online resources using communication technologies.

**Technology Enhancement:** An enhancement, extension, or addition of technology intended to further support learning activities.
Chapter 15
Learning through Web-Based Authoring Tools

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ABSTRACT

The Web-based authoring tools are great additions to online education and training programs. This chapter provides a portrait of roles and impacts of Web-based authoring tools in online learning environments. With all the unique functions and options that are available in Web-based authoring tools, it is not required for instructors and trainers to be Web development experts to create quality online learning instructions that meet the needs of the multi-generational learners (i.e., traditionalist, baby boomer, generation X, and generation Y). In addition, the Web-based authoring tools enable instructors and trainers to create media-rich learning instructions and transform dry Web content into engaging and exciting learning content. Besides recreating and transforming Web content, Web-based authoring tools also play an important role in expanding learners’ attention spans and their readiness to learn.

INTRODUCTION

A review of the literature shows that online education has been growing rapidly in the past few years across higher education institutions and corporate organizations (Boling, Krinsky, Saleem, & Stevens, 2011; Liegle & Janicki, 2006). According to Allen and Seaman (2010), for the past 6 years, the number of students who enrolled in online education has grown substantially (i.e., 17% growth rate) compared to the traditional higher education enrollments (1.2% growth rate).

The changes in technology, demographics of employees, globalization, and financial incentives have also driven corporate organizations to adopt online training systems and methods for effective and timely learning and performance improvement (Ahmad & Tarmudi, 2012). The flexibility and convenience of online education and training programs have provided many benefits to learners, instructors, and trainers. Learners who are working full-time and juggling different responsibilities in life (e.g., family, work, and community involvements) have an opportunity to learn and receive
Learning through Web-Based Authoring Tools

training without having to compromise important personal times in their life (Daugherty & Funke, 1998; Virvou & Alepis, 2003). Instructors and trainers not only have the capacity to develop and implement their training programs at any time and any place, but they also have the capacity to grade their learners’ assignments and provide feedback to them at their convenience. Despite all these benefits, some learners, instructors, and trainers still have reservations towards online education and/or training programs. Instructors and trainers who were born before the technology era are concerned that they are not able to handle or resolve any technical problems that may incur in delivering training programs through the Internet. On the other hand, older adult learners who are new to online education or online training programs are fearful that their unfamiliarity with computer hardware, multimedia software or web authoring and conference tools may hinder online learning (Kuchinke, Aragon, & Bartlett, 2001). Furthermore, learners who perceive the role of instructor-learner interactions as the determining factor of instructional satisfaction and academic success are concerned that online education or training programs may not be able to deliver those human interaction elements that they receive in the classroom settings (Kearsley & Moore, 1996).

Web-based authoring tools, the software packages that allow authors (i.e., instructors or trainers) to create interactive and media-rich documents on webpages, are great solutions for instructors and trainers in addressing their instructional development and implementation matters (Mai, n.d.). Web-based authoring tools range from simple tools (e.g., Prezi or Articulate) that allow instructors and trainers to convert their instructional PowerPoint slides to online learning materials to advanced software that enables authors to create complex online learning content (e.g., Macromedia Dreamweaver, NetObjects Fusion, ZebraZapps, or Course Builder) (Berking, 2013). Web-based authoring tools can be classified into two categories based on the purpose of instruction. One is to use them to simply develop and teach pedagogically oriented instructional content. The other is to create interaction rich learning environments so that learners can be actively engaged and practice intended knowledge and skills to immediately perform during the instruction or on the job (Murray, 1999). In general, the authoring tools not only enable instructors and trainers to build interactive online content for their teaching and training sessions, but they also enable instructors and trainers to incorporate different functions or features such as animations, audio, videos, discussion forums, or hyperlinks to the learning instruction sites to capture their learners’ interest and motivation.

ROLES OF WEB-BASED AUTHORING TOOLS IN LEARNING ENVIRONMENTS

Web-based authoring tools such as Microsoft Dreamweaver, NetObjects Fusion, or SyberWorks Web Author are great additions to online education. They are easy and cost-effective alternative tools to develop and implement instructional or training programs (Virou & Alepis, 2003). In using these kinds of tools, instructors and trainers are not required to become web design experts in developing web rich instructional content and interactions. They can start creating and developing their instructional content as soon as they have familiarized themselves with the basic functions of those web-based content authoring tools.

Nowadays, web-based authoring tools are commonly used in for-profit and not-for-profit U.S. higher education institutions and corporate organizations for online education and training programs. In recent years, many U.S. institutions have started to expand their business prospects by creating and developing online degree programs that enable them to recruit more U.S.- and foreign-born students (Howell, Williams, & Lindsay, 2003; Lederman, 2013). For example, the Penn State World Campus, one of the well-recognized
Learning through Web-Based Authoring Tools

U.S. institutions, offers various online programs (i.e., associate, bachelor, master, and certificate) to students in the U.S. and around the world. As reported by Dawson (2013), in 2013, a total of 13,287 students representing different countries (e.g., U.S., South Korea, Thailand, Singapore, and Germany) enrolled in their online certificate or degree programs, which was a 9 percent increase from the previous year. Similarly, many corporate organizations, especially those that have branches all over the U.S. or in foreign countries (e.g., airline companies, Dell, John Deere), have also utilized web-based authoring tools to develop and offer more online training and professional development programs. It not only saves the organizations large sums of training expenses, but also provides more learning opportunities for the organizations’ employees. As evidence of this booming trend of online learning and training, IBIS reported that corporate organizations spent $91 billion in educating and training their employees through e-learning and web-based training programs (2012). They also predict that this expenditure will increase 23% by 2017.

In addition, web-based authoring tools have affected the instructors, trainers, and learners within the organizations. From the instructors’ and trainers’ perspectives, web-based authoring tools have become useful tools for instructors and trainers to actively engage in online learning and training programs as well as to develop online instructional programs with limited programming or web development skills. Instead of spending time learning HyperText Markup Language (HTML) or any programming languages, instructors and trainers can either work from the Word files or the templates that are available in the web authoring tools in order to develop instructional content. Most of the templates consist of the WYSIWYG (What-You-See-Is-What-You-Get) interface, which enables instructors and trainers to visualize their web content outcomes as they design and edit their learning instructions. Once they have completed their design phase, they can streamline the instructional content and activities and convert their instructional content lesson-by-lesson or all at once. These tools have indeed simplified the process of creating online education and training programs. It is no longer the programming experts’ responsibility to create or develop instructional programs on the web. Furthermore, web-based authoring tools enable instructors and trainers to improve the quality of online instructions or training programs by incorporating various audio, video or animation features to make their web content more interesting and lively. Additionally, some instructors may even use the authoring tools to create personalized tutoring services for learners who need additional support and assistance for their learning. Instead of using plain text or dull human voices to teach on the web, they can create tutoring animation characters that can be programmed to produce different effects (i.e., voices, movements, reaction speed) to resemble human characteristics.

From the learners’ perspective, web-based authoring tools have provided learning and training accessibility to different types of learners, especially learners who are severely ill or have disabilities. Children with terminal diseases no longer need to be left behind; instead, they can learn and connect with their peers and instructors at home or in their hospital bed. Also, web-based authoring tools can make quality education and training programs more affordable for the learners. For example, learners who have been dreaming about pursuing a higher education degree from a U.S. institution but cannot afford to spend enormous amounts of money for the living expenses can now make their dreams come true via online education that is developed by web-based authoring tools. In addition, with all the navigation controls and bookmarking options that are available in the web authoring tools, learners may find it easier to search for specific instructions on the web. Also, the bookmarking or downloading option allows learners to download and save a copy of the instructional content on their computer’s local...
Learning through Web-Based Authoring Tools

disk drive or Universal Serial Bus (USB) drive, which enables them to have access to the learning instructions at their convenience. Further, the web authoring tools provide functions that allow learners to receive constant feedback from their instructors and trainers.

While web-based authoring tools provide so many benefits and advantages over traditional learning and training design methods, some researchers indicate several disadvantages of web-based authoring tools (Arthur, 2014). First, one potential problem is that it may limit instructional designers’ and content developers’ creativity by requiring them to use the embedded templates or content development sequences employed by the web-based authoring tools. If this is the case, instructional content created by the same web-based authoring tools will have very similar looks and features. Second, based on the selected web-based authoring tool, instructional designers and content developers will have limited options in terms of incorporating media types, interactive learning activities, evaluation components, navigation menus, etc. Third, too much reliance on the selected web-based authoring tools may create long-term viability of the instructional and training programs that may be caused by the sudden unavailability of the selected web-based authoring tools. Lastly, technical problems such as Internet outage or server malfunctioning may create difficulties for instructional designers and content developers whereas they will not have such problems in using desktop based authoring tools.

In sum, web-based authoring tools have provided many benefits to institutions and organizations. It can provide much convenience and flexibility to instructors, trainers, and learners in online education or training programs. Instructors and trainers have the ability to create and re-structure their online instructions to make them consistent, engaging, and user-friendly for their learners. Also, web-based authoring tools have improved the quality of online learning, delivery methods, and accessibility of online education and training programs.

GENERATIONAL LEARNING STYLES

According to Coates (2007), there are four different generations of adults living, working, and learning within the same society. Those are: traditionalists, baby boomers, generation X, and generation Y. Each generation has its own unique characteristics and group personalities but they also have different perceptions of learning. To better understand the four generational learners, this section will cover the characteristics of each generation, their learning style differences, and perceptions of learning.

Regarding generational difference, many studies have been conducted and identified those unique differences found between each generation (Karp, Fuller, & Sirias, 2002; Lancaster & Stillman, 2002; Zemke, Raines, & Filipczak, 2000). While some studies indicate slightly different interpretations about the age spectrum and characteristics of the four generations, we have reviewed all those differences and synthesized them into agreeable integration. Table 1 illustrates the general characteristics of the four generations.

When we searched numerous articles about generational differences in learning style, we found very few studies examined the effect of generational differences on how each generation learns. Among them, Honigsfeld and Dunn (2006) identified different learning characteristics of the four generations. Schae (1995) indicated that adult learners’ cognitive abilities such as verbal comprehension, inductive reasoning, and verbal memory have changed as they become older, which provides an important clue to apply different strategies for individual learning for different generations. The following section provides de-
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Table 1. Differences in the characteristics of the four generations

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<th>Traditions</th>
<th>Baby Boomers</th>
<th>Generation X</th>
<th>Generation Y</th>
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<tbody>
<tr>
<td>Work ethics &amp; values</td>
<td>Hard working</td>
<td>Workaholic</td>
<td>Work only as</td>
<td>Similar with</td>
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<td>Discipline</td>
<td>Optimism</td>
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<td>generation X</td>
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<td>Attitudes towards authority</td>
<td>Value conformity</td>
<td>Uncomfortable</td>
<td>Not impressed</td>
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<td>interacting with authority</td>
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<td>and easily interact with authority</td>
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<td>Work/life balance</td>
<td>Sacrifice personal life for work</td>
<td>Similar with traditionalists</td>
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<td>Preferred leadership style</td>
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<td>Preferred way for learning</td>
<td>Classroom instruction</td>
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tailed explanation about the four generations and how instructors and instructional designers utilize unique approaches for instructional development and instructional activities meeting the different learning needs of each generation.

**Traditionalist**

The traditionalist generation was born before 1946. Occasionally, people also refer to them as the “Veterans” or “Silent Generation.” The majority of them are retired or at least approaching their retirement; therefore, the number of traditionalists who choose to pursue higher education is almost non-existent. However, a small percentage of them are still in the workforce. Traditionalists generally are more conservative and disciplined than other generations. They value formality, well-structured environments, and respect for authority (Kersten, 2002). Since traditionalists were born before the technology era, they are not keen with technology; as a result, they do not like any types of learning that involve technology such as online or blended learning. Therefore, classroom-based lectures or learning are recommended as appropriate alternatives for traditionalist learners. According to the Defense Centers of Excellence, trainers can improve traditionalists’ learning motivation by providing a brief history and context of the learning materials and explaining the relevance of the training instructions to the organizational goals. Even though they are reluctant dealing with ambiguity and change (Zemke et al., 2000), they view learning as an opportunity for them to develop their leadership skills in organizations.

**Baby Boomer**

People in this generation were born between 1946 and 1964. The majority of the baby boomers are still in the workforce; however, most of them are either in the mid- or late part of their careers. Baby boomers are optimistic and hard working; a small percentage of the baby boomers are back
in school to acquire new knowledge and skillsets for new careers. They firmly believe that working hard and making sacrifices are the pathways to success (Tolbize, 2008). Baby boomers are more motivated to learn when they can visualize and understand the relevance of the learning instructions to their career goals or professional goals. Similar to the traditionalists, they were also born prior to the technology era. Notwithstanding that they are as technologically challenged as the traditionalists, they never let it hinder them from being successful. Instead, some of them would sign up for training courses to help them overcome the fear of using technology for learning, whereas others would select a learning method (e.g., lecture or workshop) that works well for them.

**Generational X**

The Xers were born between 1965 and 1981, and have the smallest population size among all four generations. Growing up with two working parents, the Xers have learned to become very independent at a young age, but skeptical (Zemke et al., 2000). Their self-reliance characteristic has also made them known as the latchkey generation (Oblinger & Oblinger, 2005). Unlike the traditionalists and baby boomers, the Xers greatly value continuing education and skill development (Bova & Kroth, 2001); therefore, they always seek professional development opportunities within or outside their organizations, or enroll in different college courses or degree programs to better themselves. They are definitely more educated than their parents. Even though most Xers were born before the technology era, they are very comfortable with technology because they use technology for daily personal communication and interactions. Further, they also utilize technology (e.g., Internet, email, copy machine, scanner) at their workplace. Since the Xers are very independent and self-motivated, instructors and trainers can adopt the individualistic learning approach to teach and provide feedback to the learners.

**Generational Y**

The Yers were born between 1982 and 2000. At times, people also call this generation as “Nexers”, “Millennials”, or “The Digital Generation” (McCraw & Martindale, n.d.; Oblinger & Oblinger, 2005). The Yers were born in the technology era, so they are more technology savvy than the other generations (Lancaster, 2004). Since an early age, the Yers have started to use technology to socialize and network with their peers, and access the current media and information that is important to them. They are used to having 24-hour information access, so they always expect quick responses from their peers, colleagues, or instructors. The Yers were heavily influenced by their parents when they were kids; they have developed a strong sense of confidence within them and believe they can achieve anything as long as they set their mind to it. Similar to the Xers, the Yers also put high value on education. Most Yers continue to pursue higher education degrees after high school, which makes them the dominant group in U.S. higher education institutions. The Yers are very comfortable with online education. In fact, many Yers even prefer taking online courses instead of the traditional classroom courses because online courses give them the flexibility that they want. For example, they can stay up at 2 a.m. to study for their courses or do their assignments and sleep in the next morning. Online training programs have also become popular demands for the Yers due to their flexibility and convenience features.

**IMPACTS OF WEB-BASED AUTHORING TOOLS IN ONLINE LEARNING**

The learning culture has shifted in today’s society. In the late 1990’s, teaching with texts and chalkboards were common practices across schools, colleges, universities, and training centers; however, today’s classrooms no longer rely solely on text...
and chalk boards, especially in higher education and training centers. Instructors and trainers have incorporated various technological tools (e.g., smartboard, smartphones, laptops, and tablets) into their teaching and training programs to meet the needs of the changing technology and demographics (Gunasekaran, McNeal, & Shaul, 2002). Acton et al. (2005) share that learning satisfaction is a key element in determining the effectiveness of online education and training programs; therefore, instructors and trainers need to pay attention to the details of the learning instructions and online software tools that are used to design and support online education programs.

Web-based authoring tools are useful tools for creating and developing online education and training programs. With all the unique functions and options that are available in the tools, instructors and trainers are able to design more media rich learning instructions. In addition, the web authoring tools allow instructors and trainers to provide more adaptive guidance mechanism to accommodate the learning needs of the multi-generational learners. Based on the generational learning styles descriptions, all four generational learners possess different attributes, needs, and motivations for learning. Therefore, finding ways to close the gaps among all four generational learners are crucial for instructors and trainers. For traditionalists and baby boomers who value structured learning environments, instructors and trainers can utilize the web-based authoring tools to streamline the instructional activities and directions. Also, they can improve the navigation and accessibility of the web content by adding navigation functions or options to the web content. This is extremely useful for traditionalists and baby boomers who have limited computer knowledge and skills.

In contrast, the Xers and Yers who are more knowledgeable about technology have fewer issues with web content navigation; however, they tend to struggle with attention spans for learning. The video, audio, and animation functions that are available through web-based authoring tools can improve the quality of the online learning environment and instructions as well as addressing the attention spans for learning issue. Also, instructors and trainers can transform the dry and boring learning content into something more fun, lively and exciting. Subsequently, it can improve learners’ interest and their readiness to learn.

Despite online education and training programs have provided many benefits to learners, a major challenge that learners face is the lack of opportunity for them to meet their peers and instructors face-to-face. Since most of the web-based authoring tools work in conjunction with different Learning Management Systems (LMS), instructors and trainers can encourage learners to communicate synchronously and/or asynchronously via the online chat or discussion forum. Learners can also utilize the audio and video functions as alternatives for them to communicate with their peers and instructors.

Another major concern that instructors and trainers have with online learning is to measure the learning outcomes of the learners. Without the learning outcomes, instructors and trainers will not be able to assess the effectiveness of their learning instructions and delivery methods. To overcome the issue, instructors and trainers can utilize the quiz templates that are available in the web-based authoring tools to create pre- and post-quizzes to evaluate the learning outcomes and the effectiveness of the learning instructions and delivery methods.

CONCLUSION

Web-based authoring tools are valuable additions to online education and training programs. They not only have enabled institutions, instructors, and trainers to provide a more well-rounded education and user-friendly learning environment for their learners, but they have also enabled instructors and trainers to create and extend more effective online education and training programs to learn-
ers without needing to become web developer experts. Furthermore, web-based authoring tools allow instructors and trainers to craft quality learning programs that meet the needs of the multi-generational learners.

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KEY TERMS AND DEFINITIONS

Asynchronous: Activities or events that do not take place in real time.

For-Profit Institutions: Institutions that are founded with the mission of generating profits for owners and shareholders through education services.
HyperText Markup Language (HTML): A programming language that enables author to write, develop, and edit web pages.

Non-Traditional Learners: Learners who are above the normal age group (18-24 years old).

Not-for-Profit Institutions: Institutions that are set up to serve students, and prepare them for graduation and a successful career.

Synchronous: Activities or events that take place in real time.

Templates: Pre-developed standard layouts that authors can use to create webpages consistently.

Universal Serial Bus (USB): A portable device that allows user to store information temporarily.

Web-Based Authoring Tools: Web-design software packages that allow authors to create, develop, and edit online learning instructions without any programming knowledge and skillsets.

What-You-See-Is-What-You-Get (WYSIWYG): A user interface that allows authors to visualize the end result of their work while they are working towards it.
Related References

To continue our tradition of advancing research in the field of education, we have compiled a list of recommended IGI Global readings. These references will provide additional information and guidance to further enrich your knowledge and assist you with your own research and future publications.


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About the Contributors

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