

In Search of Definitive Best Practices for Online Higher Education

Literature Review

Noah Antisdal

University of the Cumberland

## Table of Contents

Introduction.....	4
Findings by Subtopic .....	5
Adult Learner Characteristics .....	5
Self-Directed .....	5
Experienced.....	9
Motivated .....	10
Other Noteworthy Characteristics.....	12
Summary .....	13
Gaps in the Literature.....	14
Curriculum Development .....	14
Defending the Legitimacy of Online Education .....	15
Laying the Foundation .....	17
Learning Methods .....	20
Importance of Instructional Designers.....	21
Asynchronous Curriculum .....	21
Social Presence.....	23
Summary .....	24
Gaps in the Literature.....	24
Course Development .....	25
Instructional Design Process .....	25
Adult Learning Theories .....	26
Jarvis' Learning Process.....	26
Contextualized, Situated & Ecological Learning.....	26
Constructivism .....	27
Visual Learning Theory .....	27
Visual, Auditory, and Kinesthetic (VAK) Learning .....	28
Connectivism.....	28
Online Learning Communities.....	28
Online Discussion Forums .....	30
Summary .....	31
Gaps in the Literature.....	32

Instructors .....	32
Instructor Role in Online Education.....	32
Online Faculty Development .....	32
Teacher Presence.....	34
Summary .....	36
Gaps in the Literature.....	36
Technology .....	37
Ease of Use and Cost.....	37
Adaptive Learning Programs .....	38
Various Technologies to Assist Online Education.....	39
Summary .....	40
Gaps in the Literature.....	40
Discussion.....	41
Recommendations for Future Research.....	41
Conclusion .....	41
References.....	42
Appendices.....	46
Appendix A.....	46
Appendix B.....	51
Appendix C.....	52
Appendix D.....	54
Appendix E.....	55
Appendix F .....	57
Appendix G.....	59
Appendix H.....	61
Appendix I.....	63

## **Introduction**

The purpose of this literature review is to assimilate a diverse body of research into a system of best practices for online, higher education. This study includes results from organizational behavior, psychology, learning theory, adult learning, internet technology, computer assisted learning, higher education, neurology, and many other interrelated topics.

This literature review seeks to answer the following question: What is the most effective way to formally educate adults in an accelerated online format? It is doubtful that the answer can be conclusively determined solely through a review of existing literature. The breadth of research pertaining to the interrelated components of this paper is far beyond the scope here. The ultimate intent of the author is to leverage the findings of this review for a long-term study aimed at developing a new methodology for efficiently and effectively educating adult learners in an accelerated online environment.

The author structured the paper by topic rather than by the chronology of the reviewed studies or the studies' author names. Many studies produced information relevant to multiple topics, and therefore are explained partially in each topic, as is relevant to the topic. There are six fundamental components of online higher education (adult learner characteristics, curriculum development, course development, assessment, instructor roles, and technology). Due to the overwhelming abundance of research on each of these six components, this paper will convey the findings of the first three in detail, then the latter two in brief, followed by discussion and conclusion sections. The topic of assessment represents another massive literature review of its own, with hundreds or thousands of completed studies to evaluate. Despite the vast spectrum of reviewed studies, many consistent best practices reveal themselves. Many of these are located in the Appendices in outline form.

## Findings by Subtopic

### Adult Learner Characteristics

Many theorists, researchers, and practitioners have identified sets of characteristics common among successful adult learners. This paper omits the publications of the original theorists (i.e. Knowles, Kolb, Houle, Bloom, Piaget, Erickson, Jarvis, Gardner, etc.) in order to better focus on the findings of researchers who tested elements of those foundational theories. The goal is to identify best practices of application rather than evaluate theories.

Malcolm Knowles established the most commonly referenced set of adult learning characteristics. You will see many of these repeated in varying forms throughout the research. These features include the following six:

- Has an independent self-concept and can direct his or her own learning...
- Has accumulated a reservoir of life experiences that is a rich resource for learning
- Has learning needs closely related to changing social roles
- Is problem-centered and interested in immediate application of knowledge
- Is motivated to learn by internal rather than external factors
- Adults need to know why they need to learn something (Merriam, 2006, p. 22)

### *Self-Directed*

Many published studies support the first characteristic, which states that adults prefer to be self-directed. We will present the relevant findings of several of these studies here. Holt conducted a thorough meta-analysis of peer-reviewed, published studies on adult learning theories for his 2010 dissertation. Among his conclusions was a strong link between self-direction and success, with maturity level serving as a mediating variable. In agreement, he quoted Merriam, Caffarella and Baumgartner (2007):

Although there is some variance across these studies in the amount and type of self-directed learning that goes on in the general population, we can say without reservation that the existence of the independent pursuit of learning in adulthood has been established. (p. 111)

Holt goes on to review and agree with Dewey (1966), Knowles (1984), and Kolb (1984), saying that “learners need to be involved with the learning plan,” as well as Glennon (2004) “The learner should be actively involved in shaping the purpose and direction of the learning place (Holt, 2010, p. 130-131). Holt also referenced in agreement the findings of Dynan, Cate, & Rhee (2008). Their research revealed that not all learners are ready for self-directedness and can benefit from it only in proportion to their level of maturity. This clarified that self-directedness correlates with age, but with maturity as a mediator variable. In fact, very few eighteen year olds in 21<sup>st</sup> Century America qualify as “adult learners,” due to underdeveloped maturity levels. This is why many adult education programs specify that students be older than 21 to enroll, including Colorado Christian University’s College of Adult and Graduate Students. Overall, Holt did great research in assimilating findings, but produced no statistical evidence in support of the findings. However, he was in agreement with the author of this paper that “a single unified ‘theory’ of adult learning is neither desirable or possible, that learning cannot be construed as a solely mental process existing within the mind of an individual” (2010, p. 60). Rather, the goal is to evaluate and extract those applicable components.

Moore and Kearsley’s 2011 textbook on distance education included the results of many highly regarded studies. They quoted Puzziferro’s 2008 study, which evaluated three component variables of the self-directed learning construct (self-efficacy, study environment choice, and effort regulation). Although there was not a statistically significant relationship between self-efficacy and performance, there was with the latter two variables. Moore and Kearsley additionally referenced the results of Barnard-Brak, et al (2010). They identified five profiles of self-regulating learning that consistently appeared across samples (“super self-regulators, competent self-regulators, forethought-endorsing self-regulators, performance/reflection self-

regulators, and non/minimal self-regulators”) (p. 226). In support of the importance of self-direction, they found that the lower levels of self-regulation corresponded with poorer academic achievement. Moore and Kearsley also included Conrad’s 2009 findings, one of which stated, “successful learners demonstrated insightful self-knowledge in using meta-cognitive strategies” (p. 226).

In Borup’s 2012 study of English language learners (also discussed later in this paper), he cited and acknowledged agreement with several researchers on the importance of self-direction among adult online learners. In particular, he drew attention to the fact that “students with low self-regulation may find it difficult to fully participate in asynchronous online discussions (Michinov, Brunot, Le Bohec, Juhel, & Delaval, 2011; Puzziferro, 2008; Shea & Bidjerano, 2010)” (p. 48-49).

Grabe (2014) followed up on the work of Bol & Hacker, 2001; Bol, Hacker, O’Shea, & Allen, 2005; Hacker *et al.*, 2008; Hacker, Bol, Horgan, & Rakow, 2000, regarding the use of calibration as a measure of self-directed learning ability. Calibration refers to one’s ability to accurately predict one’s own performance. Grabe’s findings corroborated the earlier studies, supporting the notion that accurate self-directed calibration predicts better exam performance. In other words, those students with better self-directed learning perform better academically. Grabe’s work additionally clarified that both local and global calibration serve as predictors as well as an additional related variable that assessed one’s certainty about one’s calibrations. Grabe’s study did an excellent job of identifying potential confounds and controlling for them. The strength of these findings are limited, however, due to the localized (undiversified) population sample (158 undergraduate psychology students at a single Midwestern university).

As can be seen from these studies and the studies they build upon, the self-directed characteristic clearly and significantly correlates with online adult education performance. Students with better self-direction (usually the more mature students) have performed better academically. Because this has been so strongly demonstrated, some researchers have branched out, assuming this to be evident. Some have produced support for specific ways to prepare adults to be more successful at online learning. George Piskurich, an experienced adult educator, published an entire book on this topic in 2003, titled *Preparing Learners for eLearning*. This is a relatively early example of a researcher providing supported recommendations on how to prepare adults to be more effective at self-directed online learning. Since that early publication, many more researchers and practitioners have published their own two cents.

Mary Lowe contributed a review of each of Knowles' principles in Maddix (2012). Concerning the self-directed characteristic, she accepted and affirmed it as positively correlated with successful adult learning. However, she also commented that not all "adults" qualify, due to lower levels of maturity. In agreement with Vygotsky (1978), she recommended scaffolding the curriculum, gradually reducing the amount of academic and relational support as the student matured into higher levels of self-direction. Additionally, she reported that some adults actually resist education because of negative prior experiences in the educational system. To address these challenges, Lowe proposed the PARS model ("Providing Academic and Relational Support") for distance education. She also reinforced Gibson's (1996) recommendation of including a student orientation with specific instruction for online students at the onset of their programs (Maddix, 2012, p. 22-33).

*Experienced*

As mentioned earlier, another one of Knowles' principles of adult learning is that an adult "has accumulated a reservoir of life experiences that is a rich resource for learning" (Merriam, 2006, p. 22). The effective adult educators leverage the decades of learning experiences in their students and build upon them. This facilitates neural connections in the students' minds with existing information. It has long been known in pedagogy that the more connections one can make to information, the more likely it will be retained and effectively used. This is why mnemonic aids are so effective.

Knowles was not the first adult educator to recognize the importance of connecting personal experience with adult education. Lindeman (1961, p. 6-7) posited, "The resource of highest value in adult education is the learner's experience..." [experience is] "the adult learner's living textbook . . . already there waiting to be appropriated" (as cited in Merriam, 2006, p. 27). Building on Lindeman, Knowles wrote "'Adults come into an educational activity with both a greater volume and a different quality of experience from youths.' As adults live longer, they accumulate both a greater volume and range of experiences. Knowles also observes that adults tend to define themselves by their experiences" (Merriam, 2006, p. 27). Kolb followed up with his own endorsement in his 1984 publication when he stated, "Learning is a continuous process grounded in experience. Knowledge is continuously derived and tested out in the experiences of the learner" (as cited by Merriam, 2006, p. 27).

While on the topic of experience, it is important to warn adult educators that not all learners are as tech-savvy as expected. Many educators assume that all learners after the Baby Boom generation are well versed in technology. This assumption often overlaps into other related fields that rely on technology. Compounding this issue is that many of the learners

themselves believe that they are tech-savvy because of their daily use of various forms of social technology. However, as Reichart (2015) noted, DeNisco (2015) found,

[Quoting DeNisco (2015)] “Today’s students may be skilled at texting and social media, but many are unable to perform online research and distinguish accurate information on the web (p. 24)”... On a superficial level, these students appear well-versed in all things digital. However, in the face of research papers, citation and documentation methods, and the ever-present specter of plagiarism, the same students crumble. The result, especially in an online educational environment, is attrition, followed by the institution’s inevitable focus on retention. (145-146)

Educators should therefore implement the “experienced” principle carefully. They can accomplish this by leveraging the students’ life experiences to connect it to new content for better comprehension and retention. Adult educators should not assume that students are experienced in anything in particular before gleaning this information first hand. This can be a challenge with online education. One method that many schools are implementing, though, (including Colorado Christian University), is the use of a “Getting to Know You” discussion at the beginning of an online course. This allows the instructor and students to become acquainted with each other. It also creates experience reference points to which the instructor can connect material.

### *Motivated*

Motivation plays a significant role in most of life’s efforts. This includes learning. An adult needs to be motivated to exert time and energy to a task. There are many elements and forms of motivation that contribute to effective online learning.

According to Knowles’ aforementioned principles of adult learning, an adult “is motivated to learn by internal rather than external factors” (as cited in Merriam, 2006, p. 22). Knowles included this principle to differentiate andragogy from what is typical in pedagogy (that children learn primarily through external motivation) rather than establish an absolute law.

Adults are capable of being motivated by both internal and external factors when it comes to the motivation required to learn. However, adult educators should rely on their adult learners' intrinsic motivation more than extrinsic motivation.

Curtis Bonk, et al (2014) conducted a robust survey of 1429 of MIT's OpenCourseWare (OCW) subscribers. OCW represents one of the earliest successful, large scale Massive Open Online Courses (MOOCs). The large number of subscribers allowed Bonk, et al to collect a tremendous amount of data on the preferences of online adult learners. They summarized their findings as follows:

Key motivational factors included curiosity, interest, and internal need for self-improvement. Factors leading to success or personal change included freedom to learn, resource abundance, choice, control, and fun. In terms of achievements, respondents were learning both specific skills as well as more general skills that help them advance in their careers. Science, math, and foreign language skills were the most desired by the survey respondents. The key obstacles or challenges faced were time, lack of high quality open resources, and membership or technology fees... Among the chief implications is that learning something new to enhance one's life or to help others is often more important than course transcript credit or a certificate of completion. (p. 349)

The prevalence of intrinsic motivators supports Knowles' principle. Educators can glean specific motivators from these findings to develop, market, and implement more motivating and desirable courses. However, the results are not conclusive for all adult learners. This was a niche group of people enrolled in free MOOCs and their preferences and motivations could vary substantially from those who are pursuing an expensive online degree.

In each of the past four years, The Learning House, Inc. and Aslanian Market Research have release a joint study titled Online College Students. In the spring of 2015 they surveyed 1,500 adults that were recently enrolled, currently enrolled or planning to enroll in the next 12 months in a fully online undergraduate, graduate degree program, certificate or licensure program. The study includes a broad, nationwide sample spanning all levels of higher education.

A large portion of the survey focuses on exposing the students' preferences and motivations. The key findings of the surveys are available in Appendix A. Here are a few highlights from pages 6-8 of the study (Clinefelter & Aslanian, 2015):

- The biggest motivator for the students to pursue their degrees was to advance their careers (75% of surveyed students selected this).
- A higher percentage of students prefer electronic textbooks over paper copies (43% to 33%). This is significant because it is a great way to lower student education costs as electronic books are sold at a fraction of the price of the paper copies.
- 50% of online students live within 50 miles of the school and 65% live within 100 miles.
- Price is increasingly becoming the most significant reason to select one school over another. 45% of online students selected the cheapest option that they could find in 2015 versus 30% in 2014!
- Online education is becoming highly commoditized and competitive. Students are demanding programs that are tailored to their preferences, which include lower prices, shorter terms (5-8 weeks), shorter time to program completion, and generous credit transfer policies. In other words, it is a buyer's market and the students know it.

#### *Other Noteworthy Characteristics*

A review of the literature regarding online students revealed a few additional characteristics of note that have shown correlations to student academic success. One such characteristic is external support. Those students with stronger external support perform better academically. As cited in Maddix (2012), Ormond Simpson's (2003) research on student retention identified "family and friends" as the most important source of external support. This category ranked above academic tutors, other students, employers, and the school itself (p. 46).

Jason Baker wrote one of the articles in the Maddix (2012) book. It highlighted the six personal characteristics he consistently found to be associated with academic success among online students. Students possessing the following strengths are more likely to succeed:

- 1) Technological resources and literacy
- 2) Strong reading skills
- 3) Ability to communicate effectively via writing
- 4) Good time management
- 5) Willingness to seek help when in need

6) A degree of independence and learner autonomy (p. 103).

One final characteristic of note actually represents an entire category, neurology (the physical biology of the students' brains). As technology progresses, scientists discover increasingly sophisticated methods of assessing learning. The benefit is that these methods are much more objective and physical than the latent construct-based, subjective, learning assessments that social scientists have been depending on for decades. One interesting and promising method of assessing learning through the study of neurology is by measuring Bayesian Spiking Neurons (BSN). Using statistical probability modeling and brain scanning of electrically spiking neurons, scientists are able to accurately estimate inference and learning. Kuhlmann (2014) developed an efficient algorithm and method based on Fast Learning, which can quickly assess the energy-efficient spike coding of BSNs. Empirical, experimental, and physical studies such as these can not only reveal students who will be most successful in online learning, but a better understanding will lead to more efficient methods of instruction. Studies like these have the potential to unlock the mysteries of the human mind and learning. Perhaps the next exponential, technological revolution will involve the maximization of the human neurological potential.

*Summary*

This first section focused on the student element of the online education system. A review of theory-based studies revealed a number of best practices that can be implemented on broad scales. Integrating the most supported principles can significantly improve and accelerate online education. These principles include the need for adult learners to be self-directed, the benefit of connecting the learning to the students' rich life experiences, and the reliance more on their intrinsic motivation rather than attempting to motivate them extrinsically. Additional

success factors can help identify students who are prepared for success as well as to better prepare those who are not yet ready. Finally, human neurology holds the key to exponential advances in education and learning.

### *Gaps in the Literature*

It is difficult to pinpoint every gap in the literature due to the overwhelming span of topics involved in accelerated, online adult education. This literature review included about fifty studies out of potentially hundreds or even thousands of relevant possibilities. It does seem apparent, however, that there is a lack of empirical, experimental studies. The strongest evidence will likely come out of true experimental designs, which allow for variable manipulation across groups and causality determination. The potential with neurology is a promising example of where education and learning might advance in the near future. Additional, large scale learning experiments will help, but someone has to cover the significant expenses involved. Researchers can attain small gains in knowledge through repeated use of the most proven survey instruments and assessments. The broader the researchers apply these instruments (in terms of sample, setting, learning content, etc.) the more powerful and useful the data.

### **Curriculum Development**

The second of five major components of online higher education pertains to the development of the curriculum. The use of these terms here is meant to represent the high-level program development more than the course by course details. This section will first present some support for using online higher education at all. It will then delve into a variety of key factors pertaining to quality online curriculum development.

*Defending the Legitimacy of Online Education*

Over the course of the past few decades, studies have consistently demonstrated no substantial benefits of in-seat education over online education. In 1999, Russell (as cited in Maddix) reported that the debate over the legitimacy of online education was put to rest by 355 studies showing that there was no significant difference between traditional campus-based education and distance education” (2012, p. 42)! That is more than abundant validation for online learning! The big criticisms against online instruction were increased transactional distance between students and instructors and decreased social presence. However, Maddix pointed out that “because mentored online seminar courses increase both structure and dialogue, transactional distance is significantly decreased and social presence is significantly increased” (2012, p. 45). In many cases, the increased structure and additional time to respond in discussions actually increase the quality of the discussions and the higher level thinking of the students.

In 2015, McPherson and Bacow published a combined literature review and expert opinion article in the *Journal of Economic Perspectives*. Both authors have decades of academic executive leadership experience, with considerable amounts of time as university presidents. They cite studies, surveys, and personal experience throughout the article. Among their findings are the following:

- The percent of students taking at least one online course rose from 10% in 2002 to 33% in 2012, with the two most prominent drivers of popularity among students were cost and convenience. A major factor driving the schools (other than student demand) was that the internet affords a relatively easy way to scale education (reaching more students with less expense) (p. 140).
- There are no statistically significant advantages of traditional instruction over online instruction in terms of meeting the educational objectives, despite an abundance of studies seeking this, including Means, Toyama, Murphy, Bakia, & Jones 2009; as well as Bell & Federman 2013 (p. 145).

- After centuries of experience, traditional educational methods are not outperforming the new field of online education. This means that the growth in effectiveness will most likely occur with online education as the experience mounts (p. 146).
- The increasingly popular flipped classroom method is more conducive to online programs. This suggests one possible area of increased educational effectiveness online (p. 138).

Moore & Kearsley's 2011 textbook cites several more studies that are relevant. In 2009, Reuter published a study using multiple semesters of a science course with a lab. There were no differences in learning objective attainment or academic performance between the in-seat cohorts and the online cohorts. This directly refutes the criticism that online students are at a disadvantage when it comes to hands on activities, as are common in labs. In 2007, Hughes, et al published the results of their study assessing performance and student perceptions in algebra classes. There were no differences in either performance or student perceptions between the in-seat students and online students. Cragg, Dunning, & Ellis (2008) demonstrated that even the quality of interaction between students and faculty was just as high in online courses. Rabe-Hemp, Woolen, & Humiston (2009) found that online students actually outperformed in-seat students in many ways because they spent more time preparing for the course, were more reflective in their learning practices, and were more involved in the class discussions! Lobel, Neubauer, & Sweberg (2005) similarly found that online students devoted more time to social/academic interaction than their in-seat counterparts did. Moore & Kearsley go on to cite similar results in several more studies, including Williams (2006), Olson & Wisher (2002), and Neumann & Shachar (2003). They even referenced a website devoted to this: [www.nosignificantdifference.org](http://www.nosignificantdifference.org).

The decades' worth of academic and professional studies clearly legitimate online education as on par or even superior to traditional education. Now that we have established its

place in higher education curriculum, let us explore some of the best practices that research has revealed.

### *Laying the Foundation*

All programs, initiatives, curricula, and organizations require firm foundations. The required foundation for any curriculum is the worldview that it is based upon. It seems obvious that an educational program operating on and through truth is superior to one based on fallacies, lies, misunderstandings, illogical assumptions, debunked theories, etc. Unfortunately, the public school system and majority of liberal arts higher education programs base instruction on the latter. There are a number of reasons for this that are outside the scope of this paper. The point is that absolute truth must drive all aspects of the curriculum, regardless of whether or not it shares aspects of metaphysics, ontology, epistemology, morality, ethics, law, biology, physics, astronomy, geology, etc. with the Bible. There are components of all of these subjects in the Bible. It is futile to try to separate all of them from education in the effort to “separate church and state.” The Bible cannot be relegated to a small portion of one day a week labeled “church”. It is the human textbook on reality and the true worldview.

The Bible is filled with passages that support the idea of laying a firm foundation in Truth and on Christ. Here are a select few from the English Standard Version to support the argument:

- Genesis 1 – In the beginning, God created the heavens and the earth...
- Proverbs 1:7 - The fear of the LORD is the beginning of knowledge, but fools despise wisdom and instruction.
- Psalm 127:1a - Unless the Lord builds the house, the builders labor in vain.
- James 1:5 -If any of you lacks wisdom, you should ask God, who gives generously to all without finding fault, and it will be given to you.
- Matthew 7:24 - Everyone then who hears these words of mine and does them will be like a wise man who built his house on the rock.

- Matthew 28:19-20 - Go therefore and make disciples of all nations, baptizing them in the name of the Father and of the Son and of the Holy Spirit, teaching them to observe all that I have commanded you. And behold, I am with you always, to the end of the age.
- I John 4:1 - Beloved, do not believe every spirit, but test the spirits to see whether they are from God, for many false prophets have gone out into the world.
- Phil. 4:8 - Finally, brothers and sisters, whatever is true, whatever is noble, whatever is right, whatever is pure, whatever is lovely, whatever is admirable—if anything is excellent or praiseworthy—think about such things.

Holt, (2010) wrote a dissertation titled “An analysis of contemporary adult learning theories and the implications for teaching in the local church for spiritual maturity.” It included a thorough literature review focused on Christian adult education. Many of his findings are relevant to this paper. First, Bloom’s learning domains suggest that different content requires different strategies. Experiential learning is ideal for the behavioral domain. Transformational learning is suited for the affective domain. Several different strategies are effective with the cognitive domain, including Self-directed learning (SDL), Cognitive Learning Theory (King and Witt), and Andragogy (Knowles). However, Holt does point out that not all learners are prepared for Experiential learning or SDL, citing the findings of DiBiasco (2006) and Dynan, Cate, & Rhee (2008) which both argued that student readiness/maturity level significantly contributes to the effectiveness. Second, Holt cites Glennon’s (2004) study observations regarding six important principles of learning:

- All education is value-laden and political...
- Learning begins with students’ prior learning and experience.
- Active learning is better than passive learning.
- The quality of the experience is critical [to the effectiveness of leveraging it in education].
- The learner should be actively involved in shaping the purpose and direction of the learning place.
- A praxis (action-reflection) model provides a more qualitative experience. (Holt, 2010, p. 130-131)

D. M. Phillips contributed an article to the Maddix 2012 publication regarding the process of implementing an online program. He based his recommendations on quality research

and personal experience in online higher education leadership. The process he recommended is located in Appendix B. Bauer & Jones also contributed a similar article in the same publication. Their recommendations pertain to how to develop the online program after approval and structuring. Their recommended process outline, based on research and experience, is located in Appendix C. G.W. Bourgond contributed another article to the Maddix 2012 publication highlighting the standards established by one successful, online, Christian, higher education program. That list of standards comprises Appendix D. Together; these three sets of recommendations can form the skeleton of a plan that covers the entire process from initial planning to successful implementation and maintenance.

P. Yoho submitted a dissertation in 2011 titled “Exploring the Alignment of Distance Education with Christian Higher Education.” This was similar to the comprehensive dissertation of Holt that we discussed earlier in that it provided a great literature review of the same material required for this paper. Yoho completed a qualitative case study of several online, Christian, degree programs. Some of his findings are appropriate for this foundational section of curriculum development because they highlight the importance of the university’s leadership in the successful implementation of online programs. A summary of his relevant findings are as follows, with original researcher and publication year in parentheses:

- The danger associated with distance learning is the inclination for institutions to emphasize convenience over quality (Rovai, 2004).
- Poor planning and lack of vision by administration will create problems in areas such as a lack of understanding by the faculty, the oversight of the benefits of distance learning, the underestimate of resources needed to implement the program (Harris, 2007).
- Institutional leaders are the determinant factor, given their role in decision-making, in facilitating or impeding the implementation of distance education programs. The success rests on the attitude of the administration and the institutional structures that are set in place for the execution of the distance education policies (Mapuva, 2009). (Yoho, 2011, p. 51)

Yoho additionally stated that based on the results of the case studies, it is apparent that online, Christian, higher education programs can achieve the organizational mission. In agreement with several other researchers, he also conveyed the importance of instructional designers. One of the studied schools mentioned this as the most important factor in its success (Yoho, 2011).

### *Learning Methods*

A major component of curriculum development is the selection of instructional methods. The leadership needs to provide standards and guidelines regarding how to best convey the content so that students can retain and apply it. This section will provide some support for a few research-backed methods.

Ekmekci (2013) provided a literature review of peer-reviewed studies on case-based and problem-based learning (PBL) methods. Citing several studies (Kurfiss, 1988; McBurney, 1995; Garrison, et al, 2000; Ball & Pelco, 2006; Kamin, Deterding, Younger, & Wade, 2006) emphatically declared that these two related methods are highly effective and practical at enhancing higher-level comprehension and application of content. As cited by Merriam (2006), Dunlap & Grabinger (2003) echoed support for PBL as well. Ekmekci also noted several studies (Ledman, 2003; Topping, 1998; Ball & Pelco, 2006; Bedi 2008; Mandernach, Dailey-Hebert, & Donnelly-Sallee, 2007) supporting the finding that peer reviews among the students enhances learning (Ekmekci, 2013).

The concepts discussed in the first section of this paper on student characteristics also apply to curriculum and course development. Namely, it is important to build an environment in which the adult learners can be self-directed, can apply the educational content to their life

experiences, and can rely on their own intrinsic motivation (Merriam, 2006; Maddix, 2012; Grabe, 2014; Reichart, 2015; etc.).

The section of this paper on course development will include additional findings and best practices on learning theories, methods, practices, and more.

### *Importance of Instructional Designers*

Because the online environment is so different from the in-seat classroom, Instructional Designers are necessary. Traditional instructors that have been educated in the classroom and have always taught in the classroom are usually unequipped to develop quality online programs. They tend to try to force the same exact class, consisting mostly of a lecturer delivering content, into a learning management system. Instructional Designers know how to develop online instruction in ways that are most effective with adult, online learners. In previous sections, Bauer & Jones, Bourgond, and Yoho all mentioned the importance of Instructional Designers. Additionally, Bernard (2004) stated, “It is the characteristics of instructional design, such as the instructional strategies used, the feedback provided, and the degree of learner engagement, that create the conditions within which purposive learning will occur” (p. 411). Bernard’s assertion stemmed from his team’s comprehensive meta-analysis of the empirical literature on distance education. To date, there are no studies demonstrating anything other than support for the use of Instructional Designers in online curriculum development.

### *Asynchronous Curriculum*

Early in the curriculum development process, the leadership team needs to determine which formats of online learning they will incorporate. Asynchronous classes do not require students to be in a certain place at a certain time. The instructor provides the content, assignments, and due dates. The students direct themselves to digest the content and complete

the assignments. The interaction is limited to asynchronous discussions and emails. Synchronous classes occur in real time through online course technology. The instructor and students interact as the instructor presents the material. Synchronous classes also have asynchronous components that require the students to be self-directed. The obvious benefits of asynchronous courses include flexibility with timing and more thought provoking discussions. The obvious benefit of synchronous class sessions is the added social presence of the students and instructor.

Burns (2014) evaluated the effectiveness of asynchronous methods by comparing student performance across 18 sections of an online class. The findings demonstrated that the asynchronous discussions pushed students to think through the questions more thoroughly and write out well-structured, developed, and integrated essay responses. The discussion results exceeded those of the face-to-face cohorts. Burns concluded that, “asynchronous methods continue to be a viable option if they are empowered with clear, distinct learning outcomes and incorporate asynchronous reconfigurations of support services” (p. 116). Burns does add the caveat that online student support is vital to online student success.

However, as Giesbers (2014) demonstrated, there are significant benefits of including some elements of synchronicity in the curriculum. The study of 110 online students addressed the relationship between students’ use of synchronous and asynchronous communication over time, taking into account student motivation, and employing a dynamic inter-temporal perspective. What he found was that the use of either synchronous or asynchronous communication significantly affected and increased the use of the other. Those students who engaged in a synchronous video conference “contributed more to the asynchronous discussions both in quality and quantity” (p. 44). Giesbers recommended offering students a choice between the two communication methods each week.

*Social Presence*

The last component of curriculum development to cover is Social Presence. According to Roblyer (2015), “Social presence is the perception of “connectedness” or actually being with someone in a virtual environment” (p. 427). Several researchers have demonstrated correlations between social presence and successful learning (Garrison, Anderson & Archer, 1999; Garrison & Cleveland-Innes, 2005; Hill, Song, & West, 2009; Kinsel, Cleveland-Innes, & Garrison, 2005; Rourke, Anderson, Garrison, & Archer, 1999; Swan & Shih, 2005; Sung & Mayer, 2012). Haythornthwaite, Kazmer, Robins & Shoemaker, (2000) posited that one of the most effective ways to do this is beginning the course with brief time of face-to-face interaction (p. 11). Heinemann (2007) discovered in his literature review that “researchers present learner-learner interaction as a very significant factor affecting online learning outcomes, perhaps even the most significant factor” (p. 197).

Niess & Gillow-Wiles (2013) conducted a qualitative, design-based research study of asynchronous communication in a social metacognitive constructivist instructional framework. They found a clear, synergistic effect of several factors on the quality of asynchronous discussions. They summarized their key findings as follows:

The instructional strategies (assessed engagement, collaborative activities, peer-review as an assignment component, intentional small and large group design, and the incorporation of new and emerging technologies [i.e. Skype, Google Docs] to support free-flowing discussions) were all effective individually in helping to stimulate interaction leading to a higher level of learning and toward the enhancement of the participants’ knowledge development—a deep and meaningful approach to learning through the program expectations. Alone, none of these strategies or structures had the same impact as implementing them together as a complete trajectory where the strategies were utilized from beginning to the end of each course. The findings of this research reinforced the importance of instructor actions in creating online educational experiences where the participants interacted within a community to share knowledge and reflect on the content. (p. 13)

J. B. Arbaugh (a leading expert on social presence in online higher education) surveyed 614 MBA students from 48 different classes at a Midwestern university. The pertinent findings in the 2014 publication are as follows: “although instructor behaviors (operationalized as teaching presence) was the strongest predictor of any of our three outcome variables (perceived learning), only student behaviors (operationalized as social presence) significantly predicted all three (course grades, perceived learning and delivery medium satisfaction)” (Arbaugh, 2014, p. 349). Social presence was not just correlated with one of multiple performance variables... it predicted all three! Clearly, the literature shows strong support for developing a curriculum that encourages social presence.

### *Summary*

This section on curriculum development covered a considerable amount of information. First, it provided strong support for the efficacy of online higher education. Next, it demonstrated the importance, processes, and best practices of establishing an online program. It then introduced a few research-backed instructional methods, along with support for using Instructional Designers. Next, it provided research findings on asynchronous and synchronous communication, which led into a summary of key findings supporting the enhancement of social presence.

### *Gaps in the Literature*

Researches have completed a small set of qualitative case studies that evaluate online programs over time. More research needs to be conducted on the varying programs. The goal should be to distinguish the elements that contribute the most to the most successful programs. Ideally, the studies are planned ahead of time and controlled and monitored while the program continues in the present, rather than post hoc meta-analyses of old data. The more control that the

researchers have, the more experimental the studies are in design, the better the predictive value of the studied variables.

### **Course Development**

The third major component of online higher education (course development) is the extension of the second one (curriculum development). Curriculum development occurs at a higher, more global level. Course development refers to the actual design of each online class in terms of layout, content coverage, assignments, learning objectives/outcomes, etc. This paper will provide research supported best practices on several aspects of course development. This includes the instructional design process, adult learning theory, online learning communities, online discussion forums, and assessment.

#### *Instructional Design Process*

As was mentioned in the section on curriculum development, schools should use instructional designers when developing courses. These designers follow a relatively standardized, cyclical, instructional design process. The industry standard process is referred to as ADDIE, which is an acronym for Analysis, Design, Develop, Implement, and Evaluate. In the Bauer & Jones article of the Maddix (2012) publication, they expand on this framework to produce a recommended process of online instructional design (see Appendix E).

Moore & Kearsley (2011) also include a literature review of instructional design studies. They report that according to Garrison & Cleveland-Innes (2005), instructional design had a significant impact on online social interaction (which determines social presence). Moore & Kearsley next summarize the findings of Parrish & Linder-VanBerschot (2010) who found that instructional designers can overcome cultural differences within the online student population

through “awareness, modified design processes, culturally sensitive communication, and accommodations of critical cultural differences” (p. 227). Their textbook also mentions some specific, effective instructional design processes for online course development from Puzziferro & Shelton (2008) and Arnold (2005). Appendix E contains a list of best practices they identified for the instructional design of online courses.

### *Adult Learning Theories*

This paper discussed learning theories at a high level in the curriculum design section of this paper. It is important to discuss them specifically here in order to extract some best practices. This section will introduce each theory and its author(s) one at a time, highlighting the key findings as they relate to applicable best practices.

#### *Jarvis’ Learning Process*

Merriam (2006) explains Jarvis’s (1987, 2001) model, which provided support for two particularly effective forms of learning. Experimental learning is the result of the learner applying what he has learned by “experimenting” on his environment. Reflective practice is the other effective form and refers to the learner thinking about one’s practice as it is happening (a form of metacognition).

#### *Contextualized, Situated & Ecological Learning*

Stephen Lowe elaborated on a newer, amalgamated theory of adult learning in his article in the Maddix (2012) publication. He stated the following:

- This contextualized, situated, and ecological understanding of adult learning recognizes that learning is not just an individually transformative experience (Mezirow, 1991) but also a socially interactive experience that “instigates” (Bronfenbrenner, 2005) further development and transformation-not just individual

- development and transformation but “reciprocal development” of all the persons involved in the learning experience...
- Reciprocal interaction leads to reciprocal development. The developmental system that is created by these relationships becomes a “vehicle”... that stimulates and sustains development processes... as long as they remain interconnected...in a bond...
  - Situated contexts where learners meet are “communities of practice” (Wenger, 1999) which engender a shared approach to meaning making, understanding, apprehension, and cognitive functioning. (p. 27)

### *Constructivism*

Baviskar, Hartle, and Whitney (2009) presented the following findings regarding the Constructivist theory of learning. The first three describe the fundamentals of the theory and the fourth is the best practice application:

- New knowledge is constructed as it relates to the prior knowledge.
- Cognitive dissonance between prior knowledge and new knowledge stimulates learning.
- Application of new knowledge, accompanied by feedback, enables the learner to check its validity and to build connections with an ever-increasing variety of contexts.
- For maximum impact the learner should be able to reflect upon and express what he or she has learned.

### *Visual Learning Theory*

Akkerman, as published in Maddix (2012) advocated the following findings derived from studies of the Visual learning theory:

- The Dominican Fra Michele da Carcano observed, “Images were introduced because many people cannot retain in their memories what they hear, but they do remember if they see images. In recent decades, research by many educational and cognitive psychologists has supported this ancient observation, which has now grown to be called visual learning theory. (p. 92)
- Advocates assert that enhanced learning can occur when instructors convey course information both verbally and visually, noting that “visual literacy accelerates learning because the richness of the whole picture can be taken in at a glance” (Cross, 2011, n.p.). (p. 92-93)
- Online courses built around a clean graphic design convey organization, invite interest, and minimize student fatigue. Font selection and adequate negative space are

two fundamental ways to strengthen the visual impact for an online course. Use Arial Font. (p. 96)

### *Visual, Auditory, and Kinesthetic (VAK) Learning*

Norris (2003) summarized some of the important findings derived from VAK principles of learning. According to the data, 60% of people are primarily visual learners, 25% kinesthetic, and 15% auditory. Citing Dale's Learning Cone, Norris argues that after 24 hours we remember 10% of what we hear, 30% of what we see, 50% when we hear and see, 70% when we have a hands-on workshop exercise, and 90% by doing the real thing and then talking about it. The application is obviously to increase the modalities involved with a preference towards hands on and real world application and reflection.

### *Connectivism*

Clara (2014) demonstrated through a theoretical literature review (relying heavily on Downes, 2006 and 2012; Kop & Hill, 2008; and Lange, 2012) that "connectivism as a learning theory has significant theoretical problems and should be profoundly revised if it is to explain and foster learning" (p. 197). Connectivism, as promoted by Siemens in his 2005 publication, consists of four connected ideas.

1. Learning consists of connecting nodes.
2. Learning happens outside humans' brains as well as inside them.
3. Knowledge is not propositional, but rather a pattern of connections.
4. Knowledge/learning is emergent or unintentional. (p. 199)

### *Online Learning Communities*

An important component of online higher education is the creation and maintenance of thriving online learning communities. Yuan (2014) describes the online learning community (or eLearning community, virtual learning community) as one in which the members work with each other "via technology to construct knowledge and attain common goals... The critical element of

a learning community is a sense of community, which is the feeling that group members matter and that one's needs are satisfied through the collective effort of the group" (pp. 221-222).

Vesely (2007) identified five defining characteristics of such communities:

- 1) "A sense of shared purpose,
- 2) The establishment of boundaries defining who is a member and who is not,
- 3) The establishment and enforcement of rules/policies regarding community behavior,
- 4) Interaction among members (both faculty and students), and
- 5) A level of trust, respect and support among community members." (Maddix, 2012, p. 32)

There seems to be widespread agreement and research supporting the importance of these communities. The following is a sample of these researchers with summaries of their findings.

- Palloff & Pratt (1999) - "Collaborative learning has shown to be very important in the development of learning communities and in achievement of the desired outcomes for a course... The learning community is the vehicle through which learning occurs online" (as cited in Maddix, 2012, pp. 29-30).
- Carr (2000) – Quality online learning communities reduce the feeling of isolation and lead to fewer dropouts.
- Song, Singleton, Hill, & Myung (2004) – A survey of 76 graduate students revealed that 71% of dissatisfied online students cited lack of online community as a challenge. Course design, student motivation, time management, and comfort level with the technology positively impact the success of the perceived online community.
- Palloff & Pratt (2007) – Increased faculty and student interaction online leads to more effective learning.
- Quinn (2010) – A survey (only 30 respondents from a single school) revealed that the strongest factor in developing an online learning community is student/instructor interaction, but student/student interaction also has a positive impact.
- Berger (2013) – Citing experience and the research of Rovai (2002) and Shore (2007) states that designers can improve learning and formation by intentionally building student to student and faculty to student interaction into the online course. Berger also included some additional best practices for enhancing online learning communities: Keep class size between 10-15 students; develop clear guidelines for online discussion; use clearly written rubrics that specify interaction as a component of the grade; develop supportive learning environments; instruct faculty to be present daily in the online course, provide timely feedback, and be intentional about building relationships; and create learning activities that foster online interaction and dialogue.
- Yuan (2014) extrapolated the following guidelines from his literature review and meta-analysis:
  - "Guideline 1 (when): The effort to build a learning community should be made from the beginning of a course and continued throughout the term" (p. 224).

- “Guideline 2 (who): Both students and instructors should be involved in building the learning community” (p. 225).
- “Guideline 3 (where): Use both synchronous and asynchronous technologies to create a shared space in which students and instructor interact” (p. 225).
- “Guideline 4.1 (how): Employ various strategies to stimulate discussions” (p. 226).
- Costley (2013) – Found that the effective use of asynchronous internet discussion forums builds online learning communities, and developed an 8-step process for researchers to follow when evaluating those discussions.

Across the board, there is agreement and support for the importance of establishing the online learning communities. One should seek to implement as many of these research based best practices as possible to strengthen such communities.

### *Online Discussion Forums*

As Costley (2013) discovered, the online discussion forums are crucial to online education, particularly in strictly asynchronous classes. Due to the importance of these forums, many researchers have produced studies with valuable findings. The highlights of these are as follows:

Topcu (2007) – Established the effectiveness of the intentional repetition technique in discussion forums.

Darabi (2011) – Determined through an experimental study that using a scaffolded discussion strategy advances a discussion through the phases of cognitive presence towards higher-level learning.

Maddix (2012) – Citing another study and his own findings, stated that,

The facilitation of online discussion extends collaborative knowledge construction and information distribution as well as supporting cognitive and metacognitive engagement of reasoning and argumentation (Xie, Vance, & Ling, 2011). The successes of online discussions have been connected to the attitude of students particularly in fostering a sense of community and relationships... Research indicates that the most effective asynchronous courses include some synchronous online discussions. (p. 108)

Kemp (as cited in Maddix, 2012) – Provides the following list of best practices for promoting effective online discussions:

- Give additional guidance regarding the threaded discussion forum
- Give specific expectations for the length of responses
- Clarify netiquette guidelines
- Be committed as an institution to being online 24/7
- Provide support for faculty facilitators
- Establish cohorts
- Add variety to discussions by having students post in different ways (humor, sarcasm, debate, etc.)
- Include collaborative activities
- Build in components for student to tie material to their work, family, social life. (p. 48-51)

Gao (2013) – Identified shortcomings in online discussions and proposed a new Productive Online Discussion Model to remedy them.

Hung (2014) – Developed the Asynchronous Discussion Communication Satisfaction Model with which researchers and educators can evaluate discussions.

Yang, Newby, & Bill (2005) (as cited by Moore & Kearsley, 2011) – The use of Socratic questioning in asynchronous online discussions helped students demonstrate and maintain higher-level thinking.

Zhou (2015) – Conducted a comprehensive literature review of empirical studies on online discussion forums spanning fourteen years. Appendix H contains a summary of his findings.

### *Summary*

This section presented the findings of research pertinent to the development of online higher education courses. It started with best practices concerning the instructional design process, many of which are conveniently outlined in the appendices. Next, this section

summarized several adult learning theories along with their related, applicable best practices. This section then highlighted findings in support of the development of online learning communities. Finally, the section ended with comprehensive findings and lists of best practices concerning effective online discussions.

### *Gaps in the Literature*

The literature on course development is plentiful because it spans several domains of research. As a result, there is broad coverage of the topics. As with most other elements of social sciences, the data repository is in need of conclusive, true experimental results. Ideally, additional studies will reveal new and improved methods for establishing social presence and efficiently driving higher-level learning.

### **Instructors**

Thus far, this paper presented research findings concerning the students, the administration, and the course developers. The last group of people that play a critical role in online higher education consists of the faculty, specifically, the online instructors.

### *Instructor Role in Online Education*

It is important to understand that the role of an online instructor significantly varies from that of a traditional, in-seat instructor. The industry jargon saying is that there is a switch from “sage on the stage to guide on the side.” Instead of lecturing and disseminating as much content as possible during a class period, the online instructor plays more of a facilitator role. It is a move from classroom master to online mentor. Because the skillset is so different for effective online instruction, the first issue to discuss is online faculty development.

### *Online Faculty Development*

Attempting to simply assign online classes to your traditional faculty will result in frustration for both students and faculty. The in-seat, pedagogical paradigm does not work in online settings, particularly asynchronous ones. As cited by Maddix (2012), Shelton & Saltsman (2005) state,

Because online education is a new paradigm, many faculty are unprepared for the fundamental differences in the roles required for online teaching. The lack of preparation necessitates a higher level of involvement by administrators to ensure success... The institution has to provide a clear path of training and support to ensure the faculty they are not alone. (pp. 68-69)

Ideally, either experienced, online instructors operate the online sections, or the traditional faculty receive training and then attempt an online section with an experienced mentor. The faculty training needs to include online learning best practices and technology tutorials (particularly with the learning management system they will use). If you use experienced online instructors who are not physically located in the area, it is important to develop community among them (Lapointe, 2015). Online affiliate faculty often complain about isolation and a lack of community or sense of belonging to the university. Easy solutions are regular video conferences through software such as Zoom, occasional retreats, or periodic seminars on campus.

As cited in Moore & Kearsley (2011), Steve Yates (2009) proposes eight types of faculty development for administrators to choose from:

- Consultant or help desk to answer online faculty questions
- Initial training
- Ongoing training with a variety of modules
- Mandatory training courses before the instructor is allowed to teach online
- Conferences
- Optional training courses for professional development
- Special guest speakers
- Website devoted to training and facilitation. (p. 69).

*Teacher Presence*

One of the most important instructional tactics the online instructor needs to effectively accomplish is to establish teacher presence. This concept has been defined as “the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes” (Anderson, Rourke, Garrison, & Archer, 2001, p. 5), developed within the broader context of the community of inquiry framework (Ekmekci, 2013). Maddix contributed an article to his own 2012 book that focused on effective instructional strategies in an online course. He emphasized several facets of teacher presence. Here were some of his findings:

- Daily teacher presence predicts student satisfaction and learning.
- Timely feedback is imperative in accelerated online courses and requires increased presence.
- The instructor must use that presence intentionally as a means for building relationships with the students.
- Studies (i.e. Salmon, 2000) demonstrate that not only the quantity of teacher presence leads to increased learning, but also quality.

Several additional studies in this report also emphasize the role of teacher presence. Berger (2013) found that high teacher presence predicted higher student persistence and satisfaction. Specifically, addressing the students by name, using humor, emotional displays, and complimenting students had statistically significant effects on student satisfaction. Previous studies (including Gallien, and Oomen-Early, 2008) supported the correlation between student satisfaction and commitment/persistence. Ekmekci’s (2013) study almost exclusively focused on

the importance of teacher presence and tips on establishing it. His findings included the following:

- Citing Sheridan & Kelly (2010, p. 776), argued that ultimate success in an asynchronous online environment hinges on creating a teaching presence that is “positive and friendly, knowledgeable, empathetic, and consistent” (p. 34).
- Instructors need to be visible to, engaged with, and caring for the students throughout the course of the learning journey, which they share, paying particular attention to communication.
- Citing Palloff & Pratt (2003, p. 118), Ekmekci stated that students’ perceptions of teaching presence depend on “posting regularly to the discussion board, responding in a timely manner to e-mail and assignments, and generally modeling good online communication and interactions.” (p. 34).
- Referencing the work of Anderson, Rourke, Garrison, & Archer (2001, p. 5) Ekmekci added that these perceptions are greatly influenced by “the design, facilitation, and direction of cognitive and social processes for the realization of personally meaningful and educationally worthwhile learning outcomes” (p. 34).
- Establishing this quality level of teacher presence requires a systematic approach with adequate formative and summative feedback loops, and program evaluation (Ekmekci, 36).
- In leveraging the benefits of Self-Directed Learning, it is important to collaborate with the students (rather than direct them) to co-create the educational experience in a personally engaging manner.

Clinefelter's 2015 survey results also echoed the importance of instructor communication with students. Twenty one percent of dissatisfied online students complained about the lack of teacher presence and open channels of communication (p. 14).

One of the most successful methods to establish high quality teacher presence, as well as to enhance social presence among students, is the effective use of the online discussion forum. See Appendix I for C. D. Osborne's best practices for establishing teacher presence in these forums. Remember also the findings of VAK theory and the importance of using multiple feedback and instructional modalities. Borup (2014) established that adding audio feedback increases teacher presence and learning.

Another strategy that research demonstrated to positively affect discussion quality is the use of intentional repetition (Topcu, 2007). Simply repeat the main points of the discussion prompt and responses throughout the threads. This redirects the students to the main points and minimizes the negative effects of minimal mental engagement in online discussion.

### *Summary*

The role of the online instructor is substantially different than that of an in-seat instructor in technique and required skillset. This section has emphasized that schools need to either use experienced online instructors or provide sufficient training for traditional faculty who online class assignments. The most important component is to intentionally establish and maintain teacher presence. Convince the students that there is someone guiding them who genuinely cares about their learning. Some effective methods of accomplishing this is using video when introducing yourself and providing regular, timely participation.

### *Gaps in the Literature*

There appears to be a gap in the related literature on the most efficient and effective ways to prepare traditional faculty to teach online. There are a lot of great suggestions, but no empirical studies. Researchers need to produce valid data on a variety of technologies and techniques to improve not only teacher presence, but learning and program success as well.

### **Technology**

The final component of online higher education that this paper will discuss concerns the technology used to conduct it. Most learning management systems today are available on computers as well as mobile devices. In some cases, the classes can be streamed onto televisions. The learning management system is the application your organization builds the courses into and where the students access those courses. Some of the common ones are Blackboard, Moodle, and custom built ones housed on university servers. This section will briefly discuss some of the relevant findings that can guide an organization towards the most effective technological tools.

### *Ease of Use and Cost*

The first two factors that most organizations need to consider are the ease of use (for developers, instructors, and students) and cost. If the students cannot intuitively navigate the system, they will resist using it. It is feasible and recommended to include tutorials, but a system that requires hours of tutorial learning is not optimal. Arbaugh (2014) determined through empirical testing that perceived ease of use predicts perceived learning among students. In other words, if the students think that the system is user friendly they are more confident and actually rate their perceived performance higher. Lee (2014) advised that instructors should first build the students' learning processes through face-to-face instruction prior to putting them in online courses. This seems to especially be the case with non-traditional, adult learners who are

returning to school after a hiatus. Clinefelter's 2015 survey revealed that cost is a major factor for students. Many students choose online programs because they are less expensive. Specifically, 45% of students simply selected the cheapest program that they could find and "tuition and fees" was the most cited reason for selecting a program (p. 7, 15). This is a competitive advantage that you must retain in order to swell your online student population. This requires selecting technology that does not considerably inflate the cost of the program. The ideal is a system that balances ease of use, cost, and instructional capability.

### *Adaptive Learning Programs*

A concept that seems to be building practicality through innovative design is the use of adaptive learning programs. Adaptive learning programs adapt to the learner's strengths and weaknesses to develop a customized curriculum for each one. For years, this was mostly just an impractical and overly complex ideal. However, over a decade of innovative software engineering has led to some functional programs. In 2011, Karakostas determined through empirical testing that learning improvements are possible with fixed collaborative scripts (simplified adaptive learning) as well as dynamic adaptive support systems. In 2014, Apexlearn patented an adaptive vocabulary review tool.

The invention provides a learning support method, a learning support apparatus and a non-transitory computer-readable medium encoded with computer executable instructions for performing the learning support method to provide reviews of learned items based on a schedule determined according to a learner's learning status so as to improve the learner's learning efficiency. (Apexlearn, 2014, p. 1)

Also in 2014, Shaw proposed a feasible model of an adaptive learning program that uses guided learning pathways. However, it is still theoretical and has not been developed yet.

McPherson (2015) found that adaptive systems used in assessment, including the Graduate Record Examination (GRE) and the Common-Core state level examinations for primary and

secondary school. McPherson did also comment, though, that the cost of comprehensive adaptive learning programs currently outweighs the benefits.

### *Various Technologies to Assist Online Education*

Numerous researchers have published research findings concerning the effectiveness of various technologies in online education. The following is a brief summary:

- Naismith (2010) determined the effectiveness of wikis in collaborative online courses.
- Moore (2011) demonstrated that blogs can also enhance online learning.
- Gu (2011) conducted extensive testing on mobile devices as vehicles for online instruction and concluded the value of small “chunks” of “micro content” that students can quickly absorb on the run (p. 206).
- Borup (2013) published support for asynchronous video communication as a tool for building teacher presence, ultimately leading to increased learning and satisfaction.
- Ciampa (2014) determined that students are more motivated to learn with mobile devices through challenge, curiosity, control, recognition, competition, and cooperation.
- Giesbers (2014) commented on the growing potential of artificial intelligence in computer-aided learning, citing one example called “ARGUNAUT” that has already shown positive results (p. 46).
- Heemskerk (2014) demonstrated that students’ motivation for studying mathematics was positively related to the combination of lessons made for the interactive whiteboard and availability of these lessons on the virtual learning environment.

- Karvounidis (2014) found positive results in learning using a variety of Web 2.0 technologies, such as blogs and wikis.
- Novak (2014) reinforced VAK claims by showing the positive effect of computer simulations on learning.
- Pale (2014) found no significant benefits of using rich lecture captures.
- Reichart (2015) demonstrated the importance of supporting online learners with information literacy tools such as LibGuides and information literacy.
- Cunningham's (2015) research showed no significant effects with the use of avatars.
- Clark, et al (2015) Used a randomized experimental design and self-report outcome measures to show improvements of both social and teaching presence with video-enabled instruction. Additionally, the use of video-enabled discussion, both synchronous and asynchronous, had positive effects on social presence as well as other related measure of sociability and social space.

### *Summary*

There is now a body of evidence supporting the use of certain learning technologies while showing the ineffectiveness of other technologies. As the evidence grows, schools can use the existing findings to efficiently and effectively select and implement the optimal technologies.

### *Gaps in the Literature*

The obvious gap in the literature concerns technology that has not been released or even developed yet. Every year, innovative educators, computer programmers, and inventors release newer and more advanced applications and equipment. A decade ago, mobile learning on

smartphones was nonexistent and now is being widely used. Time will only tell what advancements the next decade will bring.

## **Discussion**

### **Recommendations for Future Research**

The initial intent of this paper was to scour all relevant findings in order to determine the most highly supported best practices. However, the volume of research that exists concerning each of the components of online higher education exceeded the capacity of a single literature review. The next step is to focus on one specific, promising aspect of a single one of the five components discussed in this paper. Then truly evaluate all relevant publications on the topic and identify if additional research is warranted. Ideally, the more focused literature review will reveal the need for empirical testing on a limited budget. The author of this paper can use this research as his dissertation.

## **Conclusion**

This paper has assimilated and summarized the results of dozens of studies pertaining to online higher education. The author extrapolated and presented the most applicable findings as best practices for administrators and educators to implement. Findings represent the research results from across the major components of online education, including the students, curriculum development, course development, the role of instructors, and emerging technology. Although numerous gaps in the research exist, there are sufficient, statistically significant findings to confidently implement a high quality, effective, cost-efficient program.

## References

- Apexlearn ltd.; patent application titled "methods and apparatus for efficient learning" published online. (2014). *Computer Weekly News*, 4831. Retrieved from <http://ezproxy.ccu.edu/login?url=http://ezproxy.ccu.edu:2053/docview/1568118677?accountid=10200>
- Arbaugh, J. B. (2014). System, scholar or students? Which most influences online MBA course effectiveness?. *Journal of Computer Assisted Learning*, 30(4), 349-362.
- Baviskar, S. N., Hartle, R. T., & Whitney, T. (2009). Essential criteria to characterize constructivist teaching: Derived from a review of the literature and applied to five constructivist-teaching method articles. *International Journal of Science Education*, 31(4), 541-550.
- Berger, M. (2013). The impact of social presence cues on postsecondary student achievement online. *UMI Dissertation Publishing*; ProQuest.
- Bernard, R. M., Abrami, P. C., Lou, Y., Borokhovsk, E., Wade, A., Wosney, L., et al. (2004). How does distance education compare with classroom instruction? A meta-analysis of the empirical literature. *Review of Educational Research*, 74(3), 379-439.
- Bonk, C. J., Lee, M. M., Kou, X., Xu, S., & Sheu, F.-R. (2015). Understanding the Self-Directed Online Learning Preferences, Goals, Achievements, and Challenges of MIT OpenCourseWare Subscribers. *Educational Technology & Society*, 18 (2), 349–368.
- Borup, J., West, R. E., & Graham, C. R. (2013). The influence of asynchronous video communication on learner social presence: a narrative analysis of four cases. *Distance Education*, 34(1), 48-63. doi:10.1080/01587919.2013.770427
- Burns, S., Cunningham, J., & Foran-Mulcahy, K. (2014). Asynchronous online instruction: Creative collaboration for virtual student support. *College English Association. CEA Critic*, 76(1), 114-131,133-134.
- Ciampa, K. (2014). Learning in a mobile age: an investigation of student motivation. *Journal of Computer Assisted Learning*, 30(1), 82-96.
- Clarà, M. E. (2014). Three problems with the connectivist conception of learning. *Journal of Computer Assisted Learning*, 30(3), 197-206.
- Clark, C. (2015) Comparing Asynchronous and Synchronous Video versus Text Based Discussions in an Online Teacher Education, *Online Learning*. Volume 19(3), 48-69.
- Clinefelter, D., Aslanian, C. (2015). *Online college students 2015: Comprehensive data on demands and preferences*. The Learning House, Inc. and Aslanian Market Research.
- Costley, J., & Han, S. L. (2013). Applying quantification of qualitative verbal data to asynchronous written discourse. *Creative Education*, 4(12), 1-8.
- Cunningham, J. (2015) Mechanizing People and Pedagogy: Establishing Social Presence in the Online Classroom, *Online Learning*. Volume 19(3), 34–47.

- Darabi, A. X. (2011). Cognitive presence in asynchronous online learning: a comparison of four discussion strategies. *Journal of Computer Assisted Learning*, 27(3), 216-227.
- Dominicé, P. (2000). *Learning from our lives*. San Francisco: Jossey-Bass.
- Ekmekci, O. (2013). Being there: Establishing instructor presence in an online learning environment. *Higher Education Studies*, 3(1), 29-38.
- Gao, F., Zhang, T., & Franklin, T. (2013). Designing asynchronous online discussion environments: Recent progress and possible future directions. *British Journal of Educational Technology*, 44(3), 469-483. doi:10.1111/j.1467-8535.2012.01330.x
- Gibson, C. C. (1996). Toward an understanding of academic self-concept in distance education. *The American Journal of Distance Education*, 10(1), 23-36.
- Giesbers, B. W. (2014). A dynamic analysis of the interplay between asynchronous and synchronous communication in online learning: The impact of motivation. *Journal of Computer Assisted Learning*, 30(1), 30-50.
- Grabe, M. B. (2014). Estimating the degree of failed understanding: a possible role for online technology. *Journal of Computer Assisted Learning*, 30(2), 173-186.
- Gu, X. M. (2011). Designing a mobile system for lifelong learning on the move. *Journal of Computer Assisted Learning*, 27(3), 204-215.
- Haythornthwaite, C., Kazmer, M. M., Robins, J., & Shoemaker, S. (2000). Community development among distance learners: Temporal and technological dimensions. *Journal of Computer-Mediated Communication*, Volume 6(1).
- Heemskerck, I. J. (2014). Interactive whiteboard and virtual learning environment combined: effects on mathematics education. *Journal of Computer Assisted Learning*, Volume 30(5), 465-478.
- Heinemann, M. H. (2007). Teacher-student interaction and learning in on-line theological education, Part IV: Findings and conclusions. *Christian Higher Education*, 6(3), 186-206.
- Holt, R. (2010). An analysis of contemporary adult learning theories and the implications for teaching in the local church for spiritual maturity. *ProQuest Dissertations and Theses*; ProQuest Religion.
- Hung, M., & Chou, C. (2014). The development, validity, and reliability of communication satisfaction in an online asynchronous discussion scale. *The Asia - Pacific Education Researcher*, 23(2), 165-177.
- Illich, I. (1970). *Deschooling society*. New York: Harpeter & Row.
- Karakostas, A. S. (2011). Enhancing collaborative learning through dynamic forms of support: the impact of an adaptive domain-specific support strategy. *Journal of Computer Assisted Learning*, 27(3), 243-258.
- Karvounidis, T. C. (2014). Evaluating Web 2.0 technologies in higher education using students' perceptions and performance. *Journal of Computer Assisted Learning*, 30(6), 577-596.

- Kop, R., & Hill, A. (2008). Connectivism: Learning theory of the future or vestige of the past? *International Review of Research in Open and Distance Learning*, 9(3), 1-13.
- Kuhlmann, L. A. (2014). Approximate, Computationally Efficient Online Learning in Bayesian Spiking Neurons. *Neural Computation*, 26(3), 472-496.
- LaPointe Terosky, A., & Heasley, C. (2015) Supporting Online Faculty through a Sense of Community and Collegiality, *Online Learning*, Volume 19(3), 147–161.
- Lee, K. J. (2014). Students' perceptions of self-directed learning and collaborative learning with and without technology. *Journal of Computer Assisted Learning*, 30(5), 425-437.
- Maddix, M., Estep, J., Lowe, M. (2012). *Best practices of online education: A guide for Christian higher education*. Charlotte, NC: Information Age Publishing.
- McPherson, M. S., & Bacow, L. S. (2015). Online Higher Education: Beyond the Hype Cycle. *Journal of Economic Perspectives*, 29(4), 135-154. doi:10.1257/jep.29.4.135
- Merriam, S., Caffarella, R., & Baumgartner, L. (2006). *Learning in adulthood (3rd ed.)*. San Francisco: Jossey-Bass.
- Moore, M. G., & Kearsley, G. (2011). *Distance education: A systems view of online learning (3rd ed.)*. Belmont, CA: Wadsworth.
- Naismith, L. M. (2011). Collaborative learning with a wiki: Differences in perceived usefulness in two contexts of use. *Journal of Computer Assisted Learning*, 27(3), 228-242.
- Niess, M., & Gillow-Wiles, H. (2013). Developing asynchronous online courses: Key instructional strategies in a social metacognitive constructivist learning trajectory. *Journal of Distance Education (Online)*, 27(1), 1-16.
- Norris, J. (2003). *From telling to teaching*. North Myrtle Beach, SC; Learning by Dialogue.
- Novak, E. (2014). Effects of simulation-based learning on students' statistical factual, conceptual and application knowledge. *Journal of Computer Assisted Learning*, 30(2), 148-158.
- Pale, P. B. (2014). Assessing the learning potential and students' perception of rich lecture captures. *Journal of Computer Assisted Learning*, 30(2), 187-195.
- Palloff, R. M., & Pratt, K. (1999). *Building learning communities in cyberspace: Effective strategies for the online classroom*. San Francisco, CA: Jossey-Bass.
- Palloff, R. M., & Pratt, K. (2003). *The virtual student: A profile and guide to working with online learners*. San Francisco: Jossey-Bass.
- Piskurich, G. (2003). *Preparing Learners for eLearning*. San Francisco, CA; Jossey Bass.
- Quinn, M. (2010). Forming an adult online learning community: The foundation of integrating faith and learning in online teaching. *Best Practices in the Integration of Faith and Learning for Adult and Online Learners*. CCCU Center for Research in Adult Learning.
- Reichart, B., & Elvidge, C. (2015). Information literacy in the changing landscape of distance learning: The collaborative design of a flexible, digital, asynchronous course. *Pennsylvania Libraries*, 3(2), 144-155.

- Rocco, S. (2007). Online assessment and evaluation. In S. C. O. Conceicao (Ed.), *Teaching strategies in the online environment* (pp. 75-86). San Francisco: Jossey-Bass.
- Shaw, C., Larson, R., & Sibdari, S. (2014). An asynchronous, personalized learning platform-guided learning pathways (GLP). *Creative Education*, 5(13), 1189-1204.
- Shea, P., Meigs, B. (2015). *Online Learning*, 19(3).
- Song, L., Singleton, E. S., Hill, J. R., & Koh, M. H. (2004). Improving online learning: Student perceptions of useful and challenging characteristics. *Internet & Higher Education*, 7(1), 59. doi:10.1016/j.iheduc.2003.11.003
- Topçu, A. (2008). 'Intentional repetition' and learning style: Increasing efficient and cohesive interaction in asynchronous online discussions. *British Journal of Educational Technology*, 39(5), 901-919. doi:10.1111/j.1467-8535.2007.00783.x
- Turns, S., Cunningham, J., & Foran-Mulcahy, K. (2014). Asynchronous online instruction: Creative collaboration for virtual student support. *College English Association. CEA Critic*, 76(1), 114-131,133-134.
- Yoho, P. (2011). Exploring the Alignment of Distance Education with Christian Higher Education. *UMI Dissertation Publishing*. ProQuest.
- Yuan, J. C. (2014). Guidelines for facilitating the development of learning communities in online courses. *Journal of Computer Assisted Learning*, 30(3), 220-232.
- Zhou, H. (2015) A Systematic Review of Empirical Studies on Participants' Interactions in Internet-Mediated Discussion Boards as a Course Component in Formal Higher Education Settings, *Online Learning*, Volume 19(3), 181–200.

## Appendices

### Appendix A

Key findings from *Online College Students: 2015*.

1. Nothing surpasses career preparation as a motivator in attracting students to higher education, and online learning is no exception. Roughly, 75% of online students seek further education to change careers, get a job, earn a promotion or keep up to date with their skills. The third most appealing marketing message among the group sampled was “a high job placement rate.” Colleges that want to excel in attracting prospective online students must prepare them for and connect them to the world of work.
2. Online students are diverse in their preferences, so there is no one-size fits all strategy to serve them. The preferences of online college students are often contradictory, so decision-makers need to consider and pursue a variety of strategies to reach the maximum amount of this population. For example, consider the response to this question: “How often would you be willing to log in at a specific time to join a required discussion or virtual lecture with your instructor and classmates?” Twenty-one percent responded “never,” but 15% responded “more than five times per course.” When asked if they preferred paper or electronic textbooks, 43% preferred electronics, 33% preferred paper and 23% did not have a preference.
3. As competition for students stiffens, online students expect policies and processes tailored to their needs. These include shorter academic terms (five to eight weeks); generous credit transfer policies; informative websites; and speedy response times on admission decisions, transfer credit reviews and financial aid packaging. These online

student-friendly practices are becoming minimum requirements for institutions that want to thrive in this arena. For example, the amount of transfer credit accepted has consistently been ranked one of the top 10 factors in selecting an institution in our survey, and one quarter of students reported receiving that information prior to submitting their application.

4. In online education, everything is local. Half of online students live within 50 miles of their campus, and 65% live within 100 miles. Even though these students rarely, if ever, visit the campus, it is nearby. Thirty-four percent of respondents reported that the recommendation of friends, colleagues and relatives was an important factor in deciding if a college had a good reputation. Online students were asked, “After identifying institutions of interest, what were your primary methods of gathering detailed information?” Twenty-four percent reported attending an open house, 31% had conversations with friends and family, and 21% had conversations with their employers or colleagues. Online students typically attend a local institution and rely on local sources for information.
5. The college or university website is a critical source of information. It is likely that a significant percentage of students base their decision solely on information from the website, without ever speaking with someone from the institution. Sixteen percent of respondents reported having no contact with personnel at the institution prior to applying. The website is prospective students’ top method of gathering information about a program. Forty-nine percent reported turning directly to the college website when they were asked, “What were your primary methods of gathering detailed information?” Similarly, 43% of students reported using the website to request more information about

their program of interest. Twenty-nine percent sent an email for more information, and 28% called the institution. Additionally, respondents reported that they selected an institution based on a variety of information such as tuition, admission requirements and available programs, all of which should be available on a college's website.

6. Affordability is a critical variable. Forty-five percent of reported that they selected the most inexpensive institution. In 2014, 30% reported selecting the most inexpensive institution. Thus, it is not surprising that among 23 potential marketing messages, the most appealing were "Affordable tuition" and "Free textbooks."
7. Although a good number of students are committed to online education, they see room for improvement. Only 10% of respondents thought online instruction was not as good as their in-class instruction. But, when asked about their concerns with online instruction, 21% reported "Inconsistent/poor contact and communication with instructors," and 17% reported "Inconsistent/poor quality of instruction." When respondents were asked if they would prefer online tutorials, independent study or instructor-led classes, only about one-third favored instructor-led online classes, which is far and away the predominant format offered currently. One-third would like a faculty member as their advisor, which is currently not a common practice. About half would find optional internships and on campus courses attractive, but they are not typically offered.
8. A large segment of college graduates will never set foot in a college classroom. When asked if they would attend on-campus classes if their program was not available online, about 30% said they probably or definitely would not. About one-quarter said they probably or definitely would not attend a hybrid or low-residency program. Just like some people no longer go to theaters, banks or grocery stores, some people prefer to get

their education via the Internet. Advances in technology, such as mobile apps and adaptive learning systems, will continue to make it easier for these people and others to go to college online.

9. Blended programs hold promise. Although some students prefer never going to campus and never participating in synchronous online learning activities, a significant percentage are interested in on-campus activities, classes and internships. About half of the respondents indicated they would attend a hybrid or low-residency option if their program was not available fully online. Twenty-two percent indicated “One or more optional on campus courses” was very attractive. A small number of colleges and universities have integrated their online and campus programs so that most programs are offered in both formats, most faculty teach in both formats, and most students enroll in both formats. These institutions are in a strong position to meet student needs and preferences.
10. Much of online higher education is highly commoditized. There are several popular degrees offered by many institutions. Thirty percent of online students are enrolled in three majors: business administration, nursing and computer science. Most universities use one of three or four learning management systems that have similar features. The same marketing messages of convenience and flexibility are used throughout the industry. Many institutions even use the same adjunct faculty members to teach their courses. The data in this report indicate that substantial numbers of students are interested in features that institutions could use to distinguish themselves, such as price, self-study options, faculty advisors or job placement rates.

11. Online study leads to online study. The majority of current online students have past experience with studying online. They know what it is, and they choose it among many other alternatives. They are savvy buyers. In fact, one indication of students' increased familiarity and comfort with online education is the increased use of the modality at the high school level. (Clinefelter & Aslanian, 2015, p. 6-8).

## Appendix B

### Process for Implementing an Online Degree Program

1. Determine the purpose for starting online program
  - a. The mission of institution must be at the heart
2. Investment level
  - a. Do you want to have an online presence or be an online player
  - b. Must have committed administrative leader responsible for program
  - c. Invest in technology
  - d. Invest in developing quality online curriculum
  - e. Give access to faculty and students to online materials, subscriptions, accounts, etc.
3. Gain institutional buy-in
  - a. Faculty buy-in is generally the most difficult (give them incentive)
4. Develop support structures for online students/faculty for everything that in-seat has (admissions, financial aid, registration, billing, library, IT, academic support, etc.)
  - a. Online students will expect “self-service where possible, just-in-time, personalized, with customized and customizable service options that can be delivered interactively and that are both integrated with related services and consistent” (Shelton & Saltsman, 2005, p. 85) (p. 151)
5. Acquire accreditation approval
  - a. Properly credentialed instructors, appropriate academic rigor, continual assessment and improvement, accurate record keeping, proper state approvals (both where school is located and where students are located)
6. Conduct marketing and recruitment (Maddix, 2012, p. 150-152).

## Appendix C

### Online Program and Curriculum Mapping

- After the decision is made to implement the program, success requires:
  - Administrative and institutional leadership
  - Internal resources
  - Support from personnel across the university
  - Program and curriculum maps (document the learning experience across the program, facilitate the development of a cohesive online curriculum, and serve as a solid framework to guide the design and development of online courses)
- Recommended Process
  - 1) Assemble Team (including Instructional Designers)
  - 2) Analyze your Adult Student Characteristics
  - 3) Define Program Outcomes
  - 4) Create Program Map
    - a. Make explicit connections among courses, assessment and program outcomes
    - b. Program Map Components
      1. External and internal stakeholders
      2. Program entry requirements
      3. Program outcomes
      4. Sequence seminars
      5. Cohorts
      6. Practicums
      7. Capstone assessments

Note: Stiehl and Lewchuch (2005) provide templates and instructions

- 5) Develop Program Assessment Plan
  - a. Evaluate, measure and assess program outcomes
- 6) Create a Curriculum Map
  - a. Show how program outcomes are addressed across courses
  - b. The U of Hawaii defines a curriculum map/matrix as “a method to align instruction with desired goals and program outcomes”
    1. They also suggest clarifying where outcomes are on the map by using IRMA instead of just an X to show the level of the outcome
      - a) Introduced
      - b) Reinforced
      - c) Mastered
      - d) Assessed
- 7) Define Program Level Expectations (consistent elements across courses within a program)
- 8) Develop Course Guides for online course developers to follow
  - a. Course Description
  - b. University and Program Outcomes/Objectives
  - c. Prerequisites
  - d. Alignment of outcomes and assessments
  - e. Major concepts/topics/issues/skills to be covered
  - f. Suggested course materials and resources
  - g. Evaluation (course assignments/grades)

## **Appendix D**

### **Standards Successfully Used in an Online, Christian College**

- Non-exhaustive list of the program's standards
  - 1) Consistent communication by residential faculty and adjuncts (at least weekly from faculty to students)
  - 2) Accessibility to students (including those with disabilities)
  - 3) Regular synchronous or asynchronous communication
  - 4) Graded discussion forums
  - 5) Create each course from standardized course templates
  - 6) Use a video introduction by the instructor for each course
  - 7) Submission of coursework (in a standardized location)
  - 8) Standard deadlines (for course development/updates)
  - 9) Regular review and updates on courses
  - 10) Incorporate technological and educational resources in every course
  - 11) Faculty training on educational technology
  - 12) Course evaluations reviewed by dean in time to make changes to next iteration
- Additional Curriculum/Infrastructure Guidelines recommended by Bourgond
  - 13) Establish a curriculum production team (with Instructional Designers)
  - 14) Use a standard, long term matrix protocol system for development

Adapted from Bourgond (2012), as cited in Maddix (2012), p. 140-145.

## Appendix E

### Online Instructional Design Process

- The faculty developing online courses should possess content expertise, online teaching and learning experience, and an instructional design background.
- Getting Started
  - Use developers who understand the differences between traditional and online instruction.
  - Use a Course Development Team (CDT) that includes the developer, instructional designer, and subject matter experts (SME).
  - If a CDT is not possible, have the SME follow an instructional design model (like a preformatted course map outline).
- Process - Follow the standard instructional design process: ADDIE.
  - Analysis (conduct a needs assessment)
    - Context of program and course
    - Student characteristics
    - SME insight
    - Objectives contain clear, concise, and measurable action verbs
  - Design (the course)
    - Assure alignment
    - Balanced workload for students and instructor
  - Development
    - Develop a syllabus (much more detailed for online courses – includes support resources)

- Be consistent across the academic program
- Ensure that activities and assignments specify learning objectives, a rationale for the activity, clear and detailed instructions, and explicit grading criteria
- Have plans/activities/assignments in place to foster community
- Consider copyrights, technology limitations, accessibility, variety of learning styles
- Develop a teaching guide to assist instructors
- Implement (install the course in your learning management system)
- Evaluate (seek feedback on the quality and effectiveness of the course)
  - Course evaluations from students – give them to the dean
  - Course evaluations from faculty

Derived from Bauer & Jones' article in Maddix, 2012.

## Appendix F

### General Design Principles and Best Practices

- Use good (clear, logical, consistent) course structure
- Use clear learning objectives
- Chunk the content into small units
- Intentionally plan participation
- Provide references to comprehensive, supplemental content
- Use repetition to reinforce key ideas and compensate for distractions
- Synthesize the content and assignments
- Develop stimulating courses with some variety in appearance (not functionality)
- Use open-ended assignments and discussion questions
- Solicit feedback and evaluation
- Web design specifics
  - Use blank space well
  - Cut out unnecessary words (be succinct) and use short paragraphs and sentences
  - When listing content, bullets are preferred unless procedural order is necessary (in which case use numbers)
  - Use tables
  - Give examples
  - Meet users' expectations for the way the information is displayed
  - Use icons or small pictures to enhance the words
  - Include pictures and other graphics, when appropriate
- Recommendations for accessibility

- Provide text descriptions as alternatives for all graphics and images
- Provide text transcripts for audio and video
- Provide text-based versions of screens that involve extensive use of frames and image maps
- Make links descriptive enough so they can be understood independent of the text
- Make backgrounds simple and uncluttered
- Select colors for text and backgrounds that provide high contrast
- Do not use flashing or audio alerts (unless they can be disabled)
- Summarize the information in tables in case it cannot be deciphered
- Be as consistent as possible in the layout of pages
- Provide alternate content for any multimedia component that requires plug-ins
- Ensure that keys can be used instead of the mouse to navigate and select options
- Allow the user to select control options and configure screen layouts
- Have your web pages tested by disabled individuals.

Derived from Moore & Kearsley's (2011) research, as summarized on pages 111-114.

## Appendix G

### Best Practices for Asynchronous Online Discussion Forums

- 1) Develop clear guidelines and expectations for discussion
- 2) Develop discussion rubrics that evaluate cognitive, social, and teaching presence
  - a. A substantive post is to include knowledge, grammar/spelling, and timeliness
- 3) The teacher is to facilitate and manage online interaction on a regular basis
  - a. Assure that students give the evidence supporting their views
- 4) Students should be responsible and committed to the process of online discussion
  - a. Openness and willingness to share
  - b. Flexibility
  - c. Honesty
  - d. Willingness to take responsibility for community formation
  - e. Willingness to work collaboratively
- 5) Generate discussion by asking good questions
  - a. Open ended
  - b. Higher levels in the Cognitive Domain of Bloom's Taxonomy
  - c. Probing questions using the Socratic method
  - d. When appropriate play devil's advocate
  - e. Promote both divergent and convergent thinking
  - f. Have students defend their stances with supporting evidence
  - g. Ask students to relate course content to personal experience
- 6) Create forums for informal and relational connections with students
- 7) Creating small class sizes increases student satisfaction (14-20 students)

- 8) Develop assignments that encourage collaborative and active learning
- 9) Create balance of student and faculty interaction

Derived from Maddix, 2012, pages 113-116.

## Appendix H

### Summary of Online Discussion Study Results

- The most influential factor for participation was the connection to grades (Gerbic, 2006);
- Students in online classes participated more actively than students in face-to-face classes (Lobel, 2005; Pilkington & Walker, 2003)
- Students with previous or current face-to-face experience with peers participated more actively in online discussion than those without face-to-face experience with such peers (Brooks & Bippus, 2012)
- Feedback and involvement from the instructor and teaching assistant were related to higher levels of student participation (Wuttikietpaiboon, 2012);
- Participation varied by gender (Cheng et al., 2012; Im, 2004);
- Participants taking assigned or predetermined roles such as moderator or manager showed higher levels of participation (Pilkington & Walker, 2003; Poole, 2000; Xie et al., 2014);
- The mix of cognitive styles in a group might influence activity level (Cunningham-Atkins et al., 2004).
- Asynchronous discussions were more structured and cohesive than synchronous discussions (Bryce, 2007; Fernandez, 2007; Im, 2004);
- The instructor's involvement was related to higher levels of interaction (Light et al., 2000; Xie & Ke, 2011);
- Intrinsic motivation influenced the individual's level of interaction (Xie & Ke, 2011);
- There was a relationship between the degree of learner-learner interactions and students' perceived sense of community (Dawson, 2006);

- Arguments were likely to generate additional arguments and disagreement and then lead to higher levels of interaction (Jeong, 2003);
- Understanding the purpose of the discussion and posting questions promoted higher level interactions (Ellis et al., 2006; Lapadat, 2007);
- There was a positive relationship between level of interaction and time spent on discussion (Sorensen & Baylen, 2004). (192)
- The use of assessment rubrics encouraged students' participation and achievement (Wuttikietpaiboon, 2012);
- Students participating in online discussion outperformed those participating only in face-to-face discussion (Campbell et al., 2008);
- Participation in online discussion promoted writing performance (Picciano, 2002);
- Both active and reflective learners performed better as a result of participation in online discussion (Zhan et al., 2011);
- Kinesthetic intelligence and interpersonal intelligence were negatively affected by online discussion (Cifuentes, 2003). (Zhou, 2015, pp. 191-197)

Zhou, H. (2015) A Systematic Review of Empirical Studies on Participants' Interactions in Internet-Mediated Discussion Boards as a Course Component in Formal Higher Education Settings, *Online Learning*. Volume 19, Issue 3, 181 – 200.

## Appendix I

### Online Faculty Guidelines for Productive Discussion Forums

#### A. Prepare the Course

- 1) Develop it ahead of time.
- 2) Use clear but concise instructions.
- 3) Test everything (web links, learning management system functionality, etc.).

#### B. Establish Social Presence

- 1) Introduce yourself in discussion with professional and personal information.
- 2) Use videos of yourself when introducing yourself or posting announcements.

#### O. Discussion Facilitation

- 1) Approach the critical role of facilitating discussion with “rigor and attention” (Norton & Hathaway, 2008, p. 489) in order to fully engage online students.
- 2) Refrain from falling back on default pedagogical methods. Many instructors, especially those inexperienced with online learning theory, revert to how they were taught if not diligent about using appropriate online techniques.
- 3) Instead of lecturing, help students personally connect to the course content in order to build their own knowledge base.
- 4) Be Goldilocks in the online discussion (present enough to stimulate or guide it, but without dominating it).

- 4) Provide timely feedback, both to individuals and course-wide.

P. Maintain healthy scheduling boundaries

- 1) Use a practical schedule of interaction with students.
- 2) Post virtual office hours.

Q. Provide Closure

- 1) As the course nears the conclusion, begin to draw attention to this by reminding students of any remaining final projects or assessments.
- 2) As the course completion nears, encourage those students who appear to be struggling under the course load.

Derived from C. D. Osborne's article in Maddix, 2012, p. 84-88).