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Best Practices for Online Teaching and Learning in Health Care Related Programs

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ABSTRACT
Online learning is a significant aspect of higher education today, with an ever increasing number of programs offering distance education. The evidence related to online teaching and learning best practice has grown significantly within the last decade. It is important for health care educators who are involved with web-based courses to be immersed in the evidence available to date, as we seek to provide sound andragogy in formulating and implementing online programs. This document will explore key evidence related to three different aspects of online teaching and learning. Application of teaching/learning theories and recommendations for best practices in this arena of higher education are essential.

INTRODUCTION
Online education is a prevailing phenomenon in today's learning environment. Prevalence of online teaching and learning in higher education will continue to increase, as the adult learner seeks to gain an education in the most efficient and effective manner.[2] Recent studies have indicated that close to 90% of four-year public institutions offer online education and some online instruction considered as part of long-range planning.[3] This significant shift in teaching/learning strategies creates a need for individual reflection and development of knowledge and skills for optimal online teaching. This overview of instructor, learner, and environmental aspects that contribute to best practice provides a basis for instructor reflection on optimal strategies for successful online teaching and learning. Learner advancement is optimized when the instructor is able to create a stimulating environment that meets the needs of a diverse group of students.[2]

Although there are numerous evidence-based articles in selecting best practice standards, many instructors do not take the necessary time to develop the pedagogical or andragogical approach in a strategic manner, which includes a review of the available evidence.[2] The assumption that courses may be easily transferrable from a face-to-face structure to an online format is deceptive at best. Effective online instruction requires a concerted effort to understand the learners' needs in a different context, the technological knowledge required to be successful in the different environment, and the understanding of how to communicate optimally without the face-to-face qualities. Effective faculty training for online teaching and learning experiences has resulted in increased student engagement and satisfaction and the development of adaptive and effective teaching strategies.[3] It is in the best interest of the academic institutions, the faculty members, and the student consumers that best practice strategies are used in the transition to online teaching and learning experiences. Literature suggests various factors

differ from traditional classroom environment and online learning. These factors include structure of course content and delivery, communication practices and feedback, relationships, and learner/instructor dynamics.[2]

ASPECTS OF ONLINE TEACHING AND LEARNING

Literature related to effective online teaching and learning indicates several important aspects for competent delivery of information for positive student outcomes. Understanding instructor and learner roles, as well as the context of the online environment, are all essential elements for best practice considerations.[4] Communication, quality of course materials, technological knowledge, student engagement, and collaborative activities are also aspects that are identified in the literature as important elements of effective online educational efforts.[5]

The Community of Inquiry framework was developed to explain and evaluate the online educational experience.[6] It is a social constructivist way of viewing online teaching and learning processes. By embracing this educational philosophy, the learner constructs knowledge with the instructor through collaborative learning processes.[6]

The Community of Inquiry framework consists of three main elements: Social presence, cognitive presence, and teaching presence.[6] Within higher education, social presence is considered the degree to which the individuals in an online course feel connected to one another in the learning process.[6] Cognitive presence is the degree to which a learner creates meaning of concepts through ongoing discussions and reflection.[6] Teaching presence is the development of course content including the instructors' facilitation and fostering of social presence and cognitive presence.[6] These align with the environmental, learner, and instructor aspects that are mentioned above are key elements in the competent delivery of courses in higher education.[6]

The developers of the Community of Inquiry, as well as several other authors, have contributed greatly to a body of evidence related to the best practices in online teaching and learning.[8] Elements of this framework support further exploration for optimal online teaching and learning practices. Therefore, literature is highlighted that focuses on best practices in the areas of instructor, learner and learning environment.

THE INSTRUCTOR

The instructor is responsible for the application of theory, direct instruction, and the ability to enhance and facilitate understanding and engagement in an online course.[6] These responsibilities include organizing instructional tools and materials clearly, making the content relevant, and being clear of expectations and objectives. It is also important for the instructor to envision and plan how students will interact, not just with each other, but with the actual course content.[4] In online instruction, the context for equal opportunity engagement is enhanced, and the instructor can promote collaboration and conversation by strategically planning in an optimal way. The facilitation of discourse is recognized as a key component of the instructor role in online teaching, and it is the catalyst that promotes student participation.[6] The instructor has a direct impact on the learning environment and learner presence, with a responsibility for engaging the student and promoting a dynamic experience.[6]

EVIDENCE RELATED TO THE INSTRUCTOR ROLE

Young, who surveyed 203 undergraduate and graduate students on their perspectives of optimal online instruction in higher education, provided meaningful evidence and examples of effective online teaching.[4] Responses such as students' desire for instructors who adapted to student needs, implementing meaningful examples for discussions, and motivating students to do their best were highlighted. Respondents reported a necessity for instructors to be present in the moment and immerse themselves in the online course via discussions, video conferencing, and feedback.[4] Additional examples of optimal instructor activities in the study included instructors providing ample time to finish assignments or post discussions and planning and organizing of an online course far in advance to avoid mid semester changes.[4] The study suggested optimal direct instruction consists of proper planning and effective communication.

In a qualitative study by Lewis and Abdul-Hamid, forty undergraduate and graduate exemplary instructors were interviewed regarding their recommended effective strategies in online teaching practices.[5] Common themes were identified in the first set of interviews; the instructors were then asked to participate in a videotaped focus group.[5] Common themes reported by both instructors and focus groups included fostering student interaction, providing feedback, facilitating learning, maintaining enthusiasm, and using optimal organization.[5] Respondents indicated that fostering interaction was the first step to "Nurture a dynamic online interaction."[5] The method to foster interaction included conferencing via group projects, emails, and chat rooms. This allowed students to introduce themselves and become familiar with peers.[5] It was evident that fostering social interaction was essential in optimal direct instruction. Providing feedback was another common theme found in the study. Methods used by instructors for feedback included rubrics, small groups, privately, or as a follow- up assignments and discussion threads. Other themes found in the study were the facilitation of learning by providing clear goals and objectives, engaging learners through

meaningful activities, and reinforcing participation through course announcements. Last theme to have emerged in this study was to maintain learner enthusiasm by sending out weekly reminders and providing all course expectations and assignments at the beginning of the course.[5] This study provided examples of effective methods and the application of ideal direct instruction in an online course.

THEORETICAL PERSPECTIVES

Transformative Learning Theory

Transformative learning theory is referred to as a changing process of one's own point of view through reflection and the development of new perspectives.[9] Transformative learning theory facilitates autonomous thinking, critical reflection, and self-direction.[9] The theory postulates that the learner transforms their frame of reference based on expanding on own values, beliefs, meanings, and purpose. Instructors utilizing Transformative learning theory, can be guided to critically reflect on their own andragogy inquiry, teaching methods, and online teaching competencies.[9, 10]

Strategies to facilitate transformative learning were discussed in an article by Fish and Wickersham.[2] The authors recommended online strategies that included the attendance of online education workshops, conducting literature reviews on current online teaching practices, and evaluation of one's own teaching methods.[2] The authors suggested that instructors conduct peer reviews and collect student feedback on their online course performance that will foster self-reflection.[2]

Instructors created and fostered transformative learning by cultivating meaningful dialogue via synchronous and asynchronous methods.[2] For example, blogs and e-portfolios can be saved and viewed by the learner anytime for critical reflection and autonomy. Findings supported updates to latest software and instructional technology promote autonomous thinking, critical reflection, and self-direction. Some institutions provide web design teams to facilitate instructors' optimal course organization and instruction.[2]

CONSTRUCTIVISM EDUCATION MODEL

A constructivism education model can be applied to online teaching and learning. The constructivism model implies students integrate their previous knowledge, skills, experiences, and understanding with new information to create learning.[12] The learner is then able to utilize the new learned information as they continue to interact within their learning environment. This acquired knowledge is embedded within the learner's experiences and interpreted by the learner.[12]

Constructivist strategies applied to online education include fostering interpretation of new information, constructing educational content, and fostering meaning and application of content. The instructor can provide meaningful assignments and poignant questions to enhance learning and serve as an advisor for students to proceed to higher level of learning. Examples of a constructivist model include sharing and exchanging files, documents, or videos via web based technology.[12] Students share prior knowledge, retrieve new and old information, and collaborate with peers to create meaning and allow for metacognitive experiences.[12] Online discussion threads facilitated by students and working in groups promote a learner-centered environment.[12]

KELLER'S ARCS MOTIVATIONAL MODEL

A model used in online delivery of teaching and learning to increase learner motivation is the Keller's ARCS motivational model.[13] This model has been considered an important element in online education because of its implications on increased learner motivation and learning outcomes. The Keller's model consists of motivating students by maintaining and eliciting attention (A), such as virtual clinical simulations; making the content and format relevant (R), by modeling enthusiasm or relating content to future use; facilitating student confidence (C), by providing "just the right challenge"; and promoting learner satisfaction (S), by providing reinforcement and praise when appropriate.[13] Examples of the Keller's model include increasing motivation including the arousal of curiosity of students, making the connection between learning objectives and future learning goals, autonomous thinking and learning, and fostering student satisfaction. Keller's ARCS model has been researched by various educational online programs to analyze student motivation and learning outcomes.[13] The Keller's model serves as an example and guide for instructors to motivate and increase online engagement with their students as wells as research purposes.

A qualitative study by ChanLin investigated online student learning and motivation.14 Discussion boards, student projects, and reflection data were collected and analyzed from a 12 week web-based course.14 Respondents indicated the importance of online feedback from the instructor and peer modeling of course tasks to visualize learning progress.14 The study revealed using Keller's ARCS strategies fosters greater student online engagement by fostering self-efficacy and a sense of accomplishment.

In a mixed method study, assessing the use of Keller's ARCS on instructional design, the use of educational scaffolding fostered positive levels of student motivation.15 Relevancy, attention, confidence, and satisfaction were all common factors associated with student success in the course and course completion. For example, one student reported the following:

> I once wrote a brief posting regarding common treatments patients sometimes use at home that are harmless, but that may reflect outdated information and learning needs. The instructor wrote to challenge what evidence I used to deem the treatments "harmless." I retrieved it [the evidence], and never forgot her valuing of evidence.[15]

This example provided a student perspective on an exemplary instructor who facilitated understanding and challenged clinical reasoning. Another student expressed the following: "I find that I have used some of the terms that I learned in other classes and I know I will be using them in future classes."[15] It was evident the course content was relevant to the student in the course and promoted enthusiasm and satisfaction. Additional motivation examples included weekly emails for course content, quizzes, virtual flash cards, online presentations, and a resource center link for web tools used in the online course.[15] This study findings suggests Keller's ARCS promotes student motivation and increased understanding of concepts.[15]

THE LEARNER

In the previous section, two learning theories were discussed to highlight the role of the instructor. Assumptions are also made of the learner from the respective perspectives. In transformative learning theory, the learner is assumed to be able to grow in content knowledge, reflection, and active engagement, with optimal guidance and support by the instructor.[9] In constructivism, the learner is viewed as a participant with the ability to co-construct knowledge with the instructor. Through discourse and reflection in a collaborative learning environment, learners are able to develop appropriate competencies.[16]

Garrison et al refer to cognitive presence as the degree to which the learner is able to construct and evaluate meaning through reflection and discourse.[6] The learner in each online learning situation has particular needs that are best addressed in an intentional way by the instructor. By selecting an andragogical approach that aligns with the content development and delivery, the instructor is most likely to meet the learning needs of the online student.

Although the instructor plays a significant role in how the learner achieves the specific course objectives or intended outcomes, various evidence does indicate that learner attributes have an impact; therefore, cognitive presence is influenced by learner characteristics. A student must have the will and ability to engage in purposeful paths involving reflection and be open to constructing meaning, leading to insight and understanding.[16]

The convenience and flexibility of online courses has created a wide demographic of learners who seek out this type of academic experience. Expectations of the learner include self-relevancy and professional application to practice. Key characteristics that are essential for online learners identified were summarized from Mayes et al.[17] See Table 1.

Table 1. Essential Learner Characteristics for Online Success

Self-Motivated	Analytical
Self-Directed	Collaborative
Problem-Solver	Critical Thinker
Effective-Judgment	Resourceful
Accepts Responsibility for Learning	Inquisitive
Ability to Apply	Fluent in Technology

The characteristics listed in Table 1 appear to suggest the ideal online student learner, but every instructor recognizes that there are degrees of these skills in students, and it is rare to excel in all of these characteristics. Cultural backgrounds, former experiences, and expectations, among many other factors, shape the learning experience in addition to these general characteristics.[17]

EVIDENCE RELATED TO THE LEARNER

Lee and Lee provide an example of a study focused on the learner characteristics.[18] The researchers recruited ninety-six students, ranging in age from 21 to 24 years, from different sections of a technology course.[18] The course was provided on an E-campus system similar to Blackboard™.[18] The Myers Briggs Type Indicator, Form G (MBTI), was used to assess the personality of the students in the category of introverted/ extroverted.[18] Based on the results of the testing, the students were divided into their corresponding categories of 1) introverted, 2) extroverted or 3) mixed (extroverted and introverted individuals combined in one group).[18]

The dependent measures within the online course included the number of messages that a student posted as well as the type of interaction the student used.[18] Examples of the various types of interactions included the relationship of the post to other posts and relationship to course content.[18] Throughout the semester, the students were asked to post bi-weekly responses to instructor discussion questions that related to general challenges in the educational arena.

Results of descriptive and analysis of variance statistics indicated a significant difference in the number of posted messages among the groups.[18] The students in the extroverted and mixed groups posted more messages, were more socially interactive, and engaged more on a cognitive level than the introverted group within the E-campus system. However, there was not a significant difference in the number of postings or social interaction postings between the extroverted and mixed groups. The one area that was statistically significant between all groups was the metacognitive interaction. The mixed group exhibited more metacognitive interactions than the extroverted group and the extroverted group demonstrated more metacognitive interactions than the introverted group.[18]

This addresses aspects of learner personality variability and the impact that this may have on the online teaching and learning processes. Considerations for best practice include intentional mixing of introverts and extroverts, which leads to favorable outcomes. Extroverted students' posts resulted in introverted students' responses, increasing the overall posting and dialogue in general.[18] Further studies related to understanding learner characteristics and the influence on the learning processes, is warranted. At minimum, programs may consider initial learner characteristic assessments, as well as first course observations of involvement, in order to adjust student group placements when there are opportunities for varied grouping.

THE ENVIRONMENT

The learning environment is where students can project personal characteristics into the learning community, foster group cohesion, and express knowledge, experience, and emotions.[6] The goal is for the student to present themselves as "real people" as opposed to a computer generated name and icon.[6] Studies indicated that factors such as motivational strategies, meaningful activities, feeling of familiarity, and optimal course organization positively impact the learning environment of an online course.[4,5,6,13]

EVIDENCE RELATED TO THE ONLINE ENVIRONMENT

Studies have shown social relationships within the learning environment positively impacts group cohesion and purposeful communication.[5,6] A qualitative study by Lewis and Abdul-Hamid reported that the first step in fostering and nurturing group cohesion was to allow students to present themselves as socially engaged and emotionally present.[5] Methods utilized in the study were fostering group cohesion by students posting bios and/or introduction of themselves and maintaining interaction through chat rooms, emails, and conferences.[5] Faculty reported creating group assignments and projects to increase group cohesion.[5]

Young examined student perspectives on best practices for online teaching.[4] A twenty-five item Likert scale was administered to 199 participants with the mean age of 36 years. Respondents indicated providing timely and meaningful examples facilitated connections between newly learned concepts and personal experiences.[4] They also reported motivation and flexibility from the faculty as essential components of effective online teaching.[4] The study revealed the importance of creating and fostering an optimal online learning environment through meaningful assignments and optimal course organization.

In a study on online exemplary teaching as reported by health care students, the investigators found "students' feeling valued" was essential for creating a positive online learning environment.[20] The qualitative study on student perceptions included graduates from nursing, health studies, and advanced nurse practitioners programs.[20] Twenty-three participants responded to the study and revealed that learners who felt valued by their instructor and/or peers, reported enhanced learning.[20] Here was an example statement: "The best part came when my instructor, whose expertise and wisdom I greatly admired, noted that she had learned something new from the means by which I had presented my understanding of the concepts of nursing theory."[20] Another student report included, "I also enjoyed being asked to share my work with future students or having input for improving course."[20] To enhance the learning environment, a climate of respect was essential whether if it's face to face or virtual. By

allowing the learner to be in charge promotes a sense of respect and efficacy from the instructor.[20] Affirmation in this regard serves to enhance self-esteem, encouragement, and future learning.

THE LEARNING ENVIRONMENT AND WEB 2.0 SOFTWARE

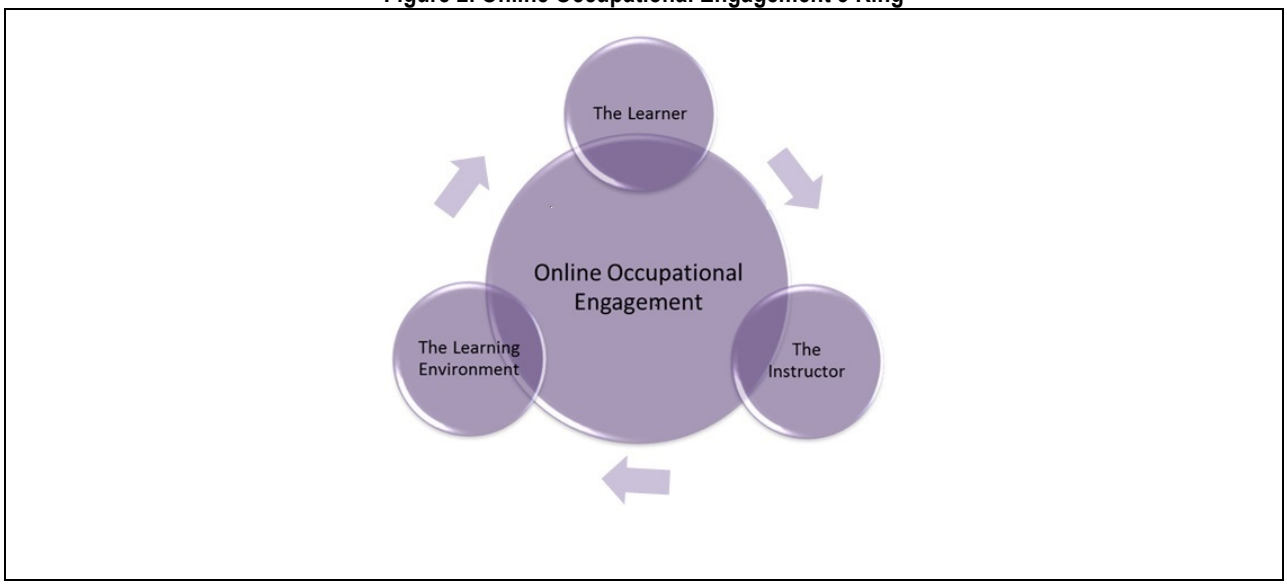
Implementing the use of Web 2.0 tools is key with online delivery programs.[21] These social tools can foster group cohesion and a social learning environment. Examples of social network in education include blogs, Facebook, Twitter, e-portfolios, twitter, and podcasts. These networks allow for collaborative work and collaborative social engagement.[21] The tools allow the learner to become autonomous in their learning process and can relate their current knowledge to actual practice making it meaningful and relevant. Research related to the use of web 2.0 tools is limited for now due to the constant changes in technology, but is an emerging topic of interest investigation in education.

ONLINE OCCUPATIONAL ENGAGEMENT

Online occupational engagement is described as a transaction that integrates considerations of the Community of Inquiry model and the Person-Environment-Occupation (PEO) model.[6,22,23] The PEO model is an occupational therapy transactive practice model incorporating three main aspects of a person's occupational performance.[22] The components of this model include the ongoing transaction between the person, environment, and occupation and its impact on occupational performance.[22] The more congruent all three are, the more efficient the occupational performance will be. Online occupational engagement emphasizes ongoing active student and instructor collaboration (Person), consisting of evidence-based and quality contributions within a supportive environment (Environment), in order to achieve transformative learning outcomes (Occupational Performance).[23] The model is an ongoing transactional process between the learner, the learning environment, and the instructor. As a result, the congruency of all three areas will result in optimal online engagement to enhance learning outcomes.[23] See Diagram 1.

This overview of pertinent literature related to best practices in online teaching and learning, combines the instructor and learner (Person), the learning environment (Environment) and the anticipated learning outcome (Occupational Performance) considerations. This is depicted in the diagram below. When an instructor is intentional about addressing all of these aspects in a meaningful and evidence-based manner, the outcomes are more likely to be positive and rewarding.[5,10,14,15,16] Further research is needed related to the mediating and moderating factors of the three aspects of occupational engagement in online teaching and learning.

Figure 2. Online Occupational Engagement 3 Ring



CONCLUSION

Academicians in health care related areas have a challenging task of considering best practices when transitioning to online teaching and learning platforms. It is essential to review available evidence and weigh best practices in conjunction with institutional and departmental visions and culture for successful outcomes.[2,5,10,14,20] Considerations of instructor presence,

cognitive presence and teaching presence are essential elements of the Community of Inquiry that provide the instructor with a solid foundation for creating optimal online educational experiences.[6]

Student learning needs are changing in this century and intentional efforts to promote best practices in teaching and learning will only enhance the efforts of faculty members who are committed to achieving optimal outcomes in our learning environments. Particular challenges in online teaching today include multi-generational cohorts, varying degrees of comfort with technology, fast paced technological advances, varying learning styles, and conflicting life demands.2,12,18,19 Understanding these potential barriers provides an even greater opportunity for the instructor to be well prepared with a sound androgogical approach to online teaching and learning. Utilizing a combination of a health care theoretical perspective and an online teaching/learning model, as well as the application of pertinent evidence-based literature, the instructor can further promote best practices in this educational realm. Clearly, continued and ongoing educational research is needed to further benefit the rewarding process of online teaching and learning.

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