TECHNOLOGY AND COGNITION MERGE WITH CHALLENGE-BASED LEARNING CYCLES ONLINE

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ABSTRACT

Teaching and learning in Web-based courses has become a global phenomenon. Educators are grappling with merging cognition and technology to offer students quality, relevant online courses. The development of social presence in the online environment is of paramount importance and requires individuals to engage in meaningful interactions about, and with, the course content. It is the richness of examining various perspectives and dialogue that stimulates critical thinking, reflection, analysis and synthesis of theory that further enables students to apply the newly learned theory to practice. The purpose of this paper is to present an adapted version of the Challenge-Based Learning ^{TM} (CBL) method (Bransford, 2012) and its utility in an online emergency preparedness and disaster planning course. The six key sections of the CBL cycle will be discussed and examples of their practical application in an online environment will be presented. CBL Cycles in this course are learner-centered and maximize the use of learner-generated content thus enhancing the value of active participation and engagement, which is at the very core of successful online education. Student and faculty perspectives related to the CBL method of learning will be discussed and lessons learned from the use of this adapted teaching pedagogy within the online environment will be shared.

KEYWORDS

Student-centered, discovery-based online learning

1. INTRODUCTION

"I hear and I forget. I see and I remember. I do and I understand" (Bradford, 2012, p. 1). The Challenge-Based Learning (CBL) Cycle is based upon discovery-based learning and requires the student to take control and be responsible for their own learning. This presentation will review the premise upon which the CBL Cycle was adapted for use in the online environment and provide examples from each section of the Cycle to walk the participants through the lived experience from the perspective of the student to illuminate the union of cognition and technology. The Cycles require a high degree of interaction with the content and with the students' classmates. The extent to which students in online education feel socially connected is frequently cited as a key factor in the perceived success of online courses (Slagter van Tryon & Bishop, 2009) and immersion in scholarly discussion is key to achieving learning outcomes related to emergency preparedness and disaster management. It is the students and their collective wisdom throughout each of the CBL Cycles that make positive online learning environments productive, not content (Kehrwald, 2008).

CBL encourages the student to engage with the content on an intellectual and emotional level initially through visual stimulation. The Think About Questions require the students to ground themselves in a particular central role in relation to the newly learned theory and leads them to critically think about the scenario and reflect upon their feelings, inspiring students to document their initial thoughts on a personal and professional level; in this course, it would be the students initial thoughts related to the disaster depicted in the Scenario Clip. A virtual discovery-based learning environment is created as students engage in research and scholarly discussion with their peers for a one week period. The research that is completed does not offer the student the "answers" to the questions but rather provide various perspectives related to the discussion topic. Students return to their journal at the end of the cycle to record their Final Thoughts; evidence of reflection, analysis and synthesis of the information is expected.

2. CHALLENGE BASED LEARNING

2.1 Challenge-Based Learning Cycle in an Online Learning Environment

Drawing heavily from constructivist learning theory (Legg et al., 2009), discovery learning is inquiry-based and engages the student in the content that is to be learned or applied. Discovery-based learning takes place in problem solving situations where the learner draws on his or her own past experience and existing knowledge to discover facts and inferences to apply to new situations (Alfieri et al., 2010). This type of learning requires the student to assimilate and accommodate new learning. Students interact with the research resources by thinking about what they are learning and learning from each other to explore questions and controversies. Students are more apt to engage in the material and remember knowledge that they have discovered on their own.

The original CBL cycle had four sections, namely, challenge, initial thoughts, resources and final thoughts. Adaptations were made to incorporate the CBL Cycle in an e-learning platform and to emphasize social interaction and dialogue. The two additions to the Cycle included adding a private journal for students to reflect upon the Think About Questions and altering the Resource section for two learning activities, namely, a Research Room and a Discussion Room. The adapted CBL Cycle includes a scenario clip (the challenge), think about questions, initial thoughts, research room, discussion forum and final thoughts. In this online course the scenario clips depict a realistic type of disaster to spark the students' interest and engage them in the situation. Immediately after viewing the scenario, students are asked to record their initial thoughts, feelings, reactions, or questions that arose while viewing the clip. The addition to the cycle of a journal was done to enable students to reflect upon the situation that they have watched and to privately, and openly, document their feelings and reactions. The journal is a private area on the e-learning platform that is only visible to the student and the professor. At this point in the cycle, students are using what information they already had prior to viewing the scenario as well as previous problem solving skills. This section of the CBL Cycle is to entice students to think about what they would do in the situation and begin to formulate their thinking about this type of disaster.

Six to eight Think About questions are posted with each different type of disaster to encourage students to begin to think about the what, why, who and how of the situation. The goal is to have the student think of themselves as the nurse in the scenario and what would they do in this particular situation. The focus is on students acquiring a "walk in the nurses' shoes" feeling and personal and professional engagement with the content.

Next the students enter the online research room. At the beginning of the Cycle there is one professor posted resource related to the scenario and two student posted resources. The research room remains 'open' all week to enable group members to post additional learning resources that they find particularly helpful and relevant. The online environment is conducive to this type of discovery-based learning structure. It encourages active engagement, promotes motivation, autonomy, independence and responsibility for one's own learning. In addition, the asynchronous nature of the CBL Cycles in this course allows time for students to locate and share additional resources within their learning groups. The research room does not contain the *answers* as to what the nurse should do in that particular disaster but they present differing perspectives-which in this course is the role of the nurse in emergency preparedness and disaster management.

After reading the research students enter the discussion forum where they participate in a week long asynchronous discussion with their peers in small groups. Students are required to post focus questions to help guide and stimulate each other's thinking. In addition, each week there is a student in the role of Research Leader and Moderator for that particular CBL Cycle. The role of the professor is to monitor all of the small group discussions and to intervene only if there is inaccurate information represented or interpersonal issues related to group dynamics arise that hamper communication within the group.

At the end of the Cycle, students return to their journal and record their final thoughts. They are able to review their initial thoughts and journal about how their thoughts have changed over the course of the week after having been exposed to current research about the topic and engaging in scholarly discussions with their peers. The goal of the journal is to enable the students to write about what they have critically thought about and discussed throughout the Cycle, providing evidence of knowledge application, analysis and synthesis. Once the Cycle is completed all of the discussion boards are locked so that no further postings can take place and are shared among all of the groups, further adding to the students learning in relation to the various perspectives from their classmates. Figure 1 provides a graphical depiction of the CBL Cycle used within the online platform.
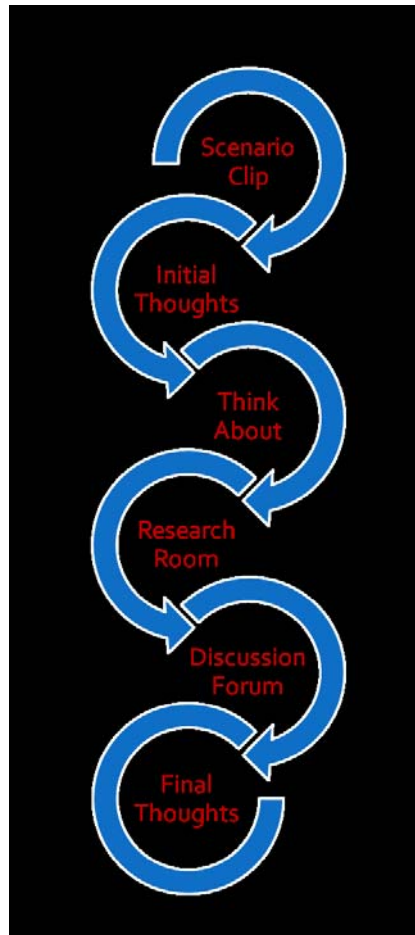

Figure 1. Graphical depiction of an adapted Challenge-Based Learning Cycle for the online learning environment.

2.1.1 Thoughts from Learners

At the end of this course students were given an evaluation form to complete in relation to the CBL Cycles. At the time of this writing, the evaluative data from the learners is not yet available but will be prior to the conference to enable this information to be included in the oral presentation. Anecdotally, students are expressing positive comments about the CBL Cycles and are embracing their research and leadership roles beyond the expectations of the professor. The goal of the course evaluation is to collect data that will inform future course offerings to improve the experience and to investigate students' impressions and experiences while engaged in this type of learning online. Evaluative data to be presented includes the students overall impression of the course, their thoughts related to the CBL Cycles, what could be done to improve learning while using the CBL Cycles, the level of engagement in relation to other online courses they have taken, and an open ended question asking for any additional thoughts or suggestions to improve the use of CBL Cycles.

2.1.2 Lessons Learned and Suggested Alterations

Depending on the compilation and analysis of the evaluative date, lessons learned and suggested revisions to the CBL Cycles will be presented.

3. CONCLUSION

The CBL Cycles are based upon a constructivist paradigm that revolves around discovery-based learning. CBL Cycles used in this online environment have stimulated student thinking, engaged students in learning new content and competencies, and empowered them to take control of their own learning. Student engagement with the material in this course has far exceeded professor expectations. Learning in this manner affords the student with a memorable and effective learning experience, while maintaining all of the cited advantages of online education. Uniting cognition and technology by way of using CBL Cycles in an online learning environment has proven to be an effective and exciting union that holds great promise for long-term retention and application of information. Thoughts from the learners were presented in addition to lessons learned from the initial use of CBL Cycles in this course were shared. Suggested revisions for improvement in the CBL Cycles will be presented as well as consideration for use of CBL Cycles in other courses. Students were not just memorizing and regurgitating knowledge while engaged in the CBL Cycles; they were doing, and when we do, as an active learner, we remember!

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REFERENCES

Alfieri, L., Brooks, P., & Aldrich, N. (2010). Does discovery-based instruction enhance learning? *Journal of Educational Psychology, 103*(1), 1-18.

Bradford, J. (2012). Challenge-Based Learning. (p. 1-6 online). Retrieved from

http://littleplanetlearning.wordpress.com/2012/02/01/challenge-based-learning/

Kehrwald, B. (2008). Understanding social presence in text-based online learning environments. *Distance Education 29*(1), 89-106.

Legg, T., Adelman, D., Mueller, D., & Levitt, C. (2009). Constructivist strategies in online distance education in nursing. *Journal of Nursing Education, 48*(2), 64-9.

Slagter van Tryon, P., & Bishop, M.J. (2009). Theroetical foundations for enhancing social connectedness in online learning environments. *Distance Education 30*(3), 291-315.