Efficacy of an Online Problem-Based Learning Course in Occupational Therapy Education

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Background & Literature Review

Problem-based learning (PBL) is a teaching method created in the 1960's that encourages students to improve their critical thinking and clinical reasoning skills through case studies, group work, discussions with faculty facilitation, and no lecture component. PBL is designed to bridge the gap between the classroom and the professional field, while encouraging active rather than passive learning. Traditionally, whether a single course or an entire curriculum, PBL is done within the classroom, but, as with all higher education, is more recently being moved to an online format.

The efficacy of traditional PBL courses is well supported through numerous studies and reviews, but few studies have been done regarding online PBL courses. Those studies which have been done concerning online PBL courses have primarily focused on the experience, consequently leading to little objective evidence regarding improved critical thinking and clinical reasoning skills. The purpose of this research study is to examine the efficacy of a single online PBL course within an otherwise lecture-based occupational therapy curriculum. Using two discipline-specific repeated-measure assessments, our study will examine the clinical reasoning and critical thinking skills of 53 students in the occupational therapy program at the University of Missouri. Our study will add to the current literature concerning the effectiveness of online PBL courses, so that our institution, as well as others, may learn if online PBL courses achieve their purpose and if additional modifications should be made.

Methodology

The 15-week online OT 8087 PBL course was designed to preserve the elements of traditional PBL, with modifications including multimedia, use of Wikis and discussion boards, and thought-provoking questions from the instructor. 53 students were enrolled in 2010 and 2011 during their final semester of coursework. Students evaluated their pre-course and post-course critical thinking and clinical reasoning skills on a 15-item Likert scale questionnaire. The 2011 class was also tested before and after the course using a case scenario similar to those on the National Board for Certification in Occupational Therapy exam. Each case scenario had multiple sections with multiple correct, incorrect, and neutral answers, leading to closer examination of causes of changes in scores. Descriptive statistical measures, t-tests, and box plots were completed using Excel.

Results

Scores for both the clinical simulation instrument and self-evaluation instrument increased significantly from initial to final ratings (p<0.001). Initial means of the self-evaluation instrument were 6.58 and the final ratings were 8.35, showing a positive increase, indicating the students did enhance their clinical psychomotor skills by taking an online PBL course. The degree to which the mean of each item increased does differ, indicating certain skills could have been targeted more than others throughout the course. Median scores increased significantly from pre- to post-test on the clinical simulation test.

Discussion

Overall, our objective of improving critical thinking and clinical psychomotor skills through an online PBL course was achieved with statistical significance because both the NBCOT and self-evaluation perception scores increased significantly.

Limitations

Variable factors in student performance
- Effort could have been affected because participants were aware the instruments were for research and did not impact course grades.
- Certain students strongly disliked computer use and may have purposefully misrepresented their abilities when completing the tests
- Small sample size of only 53 students
- From only one program (OT) at one university (MU)

Further Research

This study is a preliminary study and further research should be completed in order to strengthen results. The study may be expanded to other allied health professions in order to examine the efficacy of an online PBL course on other professions’ psychomotor clinical skills. Furthermore, the study could be expanded to more schools in addition to the University of Missouri-Columbia. Lastly, the students’ online discussion boards could be examined for content to further discover the extent of skills acquired. Minimal research has been completed on online PBL courses, and these improvements would strengthen the research for future implications.