A Comparison of Modified Team-Based Learning and Lecture-Based Instruction in Occupational Therapy Education

Paul Bonzani
University of New Hampshire

Vanessa D. Jewell
Creighton University

Barbara P. White
University of New Hampshire-Main Campus

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Abstract

This study explored the comparative effectiveness of team-based learning and lecture-based instruction in consecutive cohorts of occupational therapy students. Further, the study explored student perceptions of team-based learning. The mixed method study employed a two-group, quasi-experimental design and a broad qualitative design using thematic analysis with a convenience sample of consecutive occupational therapy student cohorts (N=70, N=62) in a human movement class. Cohort A (N=70) received instruction using a lecture-based instruction (LBI) approach and individual assessment. Cohort B (N=62) received modified team-based learning (TBL). Mid-term, final examination, and final course grades were compared. Thematic analysis was employed to assess student perceptions of TBL as an instructional method. Students receiving LBI had higher mid-term scores than those receiving TBL (p=.000). Final examination scores were also higher for LBI when compared to TBL (p=.000). However, the final course grade score showed no significant difference between LBI and TBL (p=.562). Thematic analysis revealed that students felt positive about the TBL instructional method. Further, students who participated in the TBL class perceived less academic stress, and believed testing and competency assessments were effective reflections of their learning. Both TBL and LBI are viable methods for occupational therapy educators to use in human movement/kinesiology-based courses.

Keywords

Lecture-based instruction, team-based learning, student perceptions

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Paul Bonzani, MHS, OTR/L[1]

Vanessa D. Jewell, PhD, OTR/L[2]

Barbara Prudhomme White, PhD, OTR/L[1]

University of New Hampshire[1]

Creighton University[2]

United States

ABSTRACT

This study explored the comparative effectiveness of team-based learning and lecture-based instruction in consecutive cohorts of occupational therapy students. Further, the study explored student perceptions of team-based learning. The mixed method study employed a two-group, quasi-experimental design and a broad qualitative design using thematic analysis with a convenience sample of consecutive occupational therapy student cohorts (N=70, N=62) in a human movement class. Cohort A (N=70) received instruction using a lecture-based instruction (LBI) approach and individual assessment. Cohort B (N=62) received modified team-based learning (TBL). Mid-term, final examination, and final course grades were compared. Thematic analysis was employed to assess student perceptions of TBL as an instructional method. Students receiving LBI had higher mid-term scores than those receiving TBL (p=.000). Final examination scores were also higher for LBI when compared to TBL (p=.000). However, the final course grade score showed no significant difference between LBI and TBL (p=.562). Thematic analysis revealed that students felt positive about the TBL instructional method. Further, students who participated in the TBL class perceived less academic stress, and believed testing and competency assessments were effective reflections of their learning. Both TBL and LBI are viable methods for occupational therapy educators to use in human movement/kinesiology-based courses.

Introduction

In 2014, the American Occupational Therapy Association (AOTA) adopted a research agenda that charged occupational therapy educators to develop signature pedagogies and instructional best practices to enhance learning and ensure the development of entry-level occupational therapy practitioner skills (AOTA, 2014). Calling for new pedagogies and instructional methods offers educators an opportunity to employ a variety of instructional methods in occupational therapy education. However, the evidence regarding the efficacy of many instructional methods, as applied to occupational therapy education, remains unclear. Therefore, it is reasonable to compare different instructional methods for their efficacy in attaining learning outcomes. One such comparison is the use of passive versus active learning methods.

Traditional, podium delivered, lecture-based instruction (LBI) is an instructional method used in occupational therapy education (de Sam Lazaro & Riley, 2019; Zachry et al., 2017). While LBI is useful in transferring information, it is a passive learning method that relies on fact transfer through memorization and therefore, is less effective in the development of critical thinking (Bligh, 1998; Ironside, 2005). More recent educational and neurocognitive research suggests that LBI is less effective in the development of clinical application skills than active learning processes that emphasize information synthesis and application (Bleske et al., 2014; Jakobsen & Knetmann, 2017). Chickering and Gameson (1987) described active learning as a process that promotes student interactions and conversations about what they are learning. Students are encouraged to relate past experiences to their learning and apply the learned concepts to their lives, making what they learn part of themselves. Gopalan and Klann (2017) demonstrated that active learning methods such as reduced lecture time and increased peer-to-peer interaction, improved retention, and attained learning outcomes. Finally, a recent systematic review of passive versus active learning methods demonstrated that active learning methods are superior to passive methods in improving student development of analytic, evaluative, and creative skills, and are equally effective as passive learning in comprehension and application of course information (Harris & Bacon, 2019). Therefore, it is possible that best practices in occupational therapy instruction should favor an active learning approach.

Team-Based Learning

One such active learning approach is team-based learning (TBL). Demonstrated improvements in academic performance (Bleske et al, 2014; Gopalan & Klann, 2017), increased student feelings of empowerment and engagement (McLaughlin et al., 2013), increased attendance, student cooperation (Jakobsen & Knetmann, 2017), and improved interprofessional teamwork skills (Black et al., 2016) are reported using the TBL method. However, Zachry et al. (2017) reported occupational therapy students preferring LBI. Students felt that listening to lectures improved their understanding of the material and held their attention longer than TBL activities. Furthermore, familiarity with didactic assessment used in LBI may also explain occupational therapy student

preference for LBI (Zachry et al., 2017). Epstein (2016) reported a similar preference for LBI in a cohort of speech and language pathology students, suggesting a disconnect between educational and neurocognitive research and the perceptions of occupational therapy and speech and language pathology students.

Team-based learning centers around the creation of small groups of students who are given content-based reading and video assignments to be completed prior to coming to class. Class time is spent applying the content to complex problems through the creation of effective assignments designed to increase group cohesion (Michaelsen & Knight, 2002). Instructors use the team context to facilitate understanding and apply content instead of delivering content (Parmelee & Michaelsen, 2010).The TBL method consists of four elements deemed essential for success: proper formation and management of groups, student accountability for individual and group work, students giving and receiving feedback, and assignments designed to facilitate group development and learning (Michaelsen & Sweet, 2008). Additionally, readiness assurance tests (RAT) are used at the start of class and peer to peer assessments are important components of TBL as they work to assure student accountability.

The purpose of the RAT is to ensure student preparation for class and to identify areas of strength and weakness in the student's understanding of the assigned material. The RAT process has three components: the individual readiness assurance test (IRAT) followed by the team taking the same test and processing incorrect answers with peers. Finally, there is an appeal process where the students may submit their rationale for incorrect answers. This final process is designed to ensure clarity of the test questions (Metoyer et al., 2014). The peer to peer assessment occurs at the completion of the group activities. It is a written peer assessment form that is completed by each student and shared anonymously with instructor and team members.

Formation and management of groups is described as an important consideration for effective TBL. McMahon (2008) and Fink (2002) consider team size, time in group processing of tasks and assignments and the heterogeneity of the group members as important factors in the formation of cohesive learning teams. Fink (2002) defined the group size as 5-7 students, indicating that larger groups bring more resources to the developing team. McMahon's (2008) emphasis on the heterogeneity of team members ensures further diversity of experience as differing perspectives bring increased resources to the team. Finally, it takes time for groups to develop into effective learning teams. Therefore, once groups are constructed, the membership remains consistent for the entire semester (Fink, 2008; McMahon, 2008). The learning style of the participants is not described as a consideration in team construction.

The purposes of this study were to examine the effectiveness of two different instructional methods as measured by two learning outcomes: examination and course grades. The study examined the differences in learning outcomes of LBI and TBL in

consecutive cohorts of occupational therapy students in a human movement class at a large state university in New England. Further, student perceptions of team-based instruction were explored. The study retrospectively compared consecutive cohorts of occupational therapy students with Cohort A receiving LBI and Cohort B receiving TBL using a pre class knowledge assessment and a VARK learning style inventory (Fleming & Mills, 1992) during team construction.

Method

Research Design

The study utilized a two-group, quasi-experimental, retrospective design to assess learning outcomes of a human movement course. The design compared LBI with a modified TBL method to assess the learning outcomes of multiple-choice examination and final grade scores (Portney & Watkins, 2015a). Other class assignments such as group papers required subjective interpretation by the instructor; therefore, these assignments were not considered for this study. Additionally, a broad qualitative design using thematic analysis of the post-course student evaluations of the TBL cohort explored student perceptions of TBL instruction (Braun & Clarke, 2006; Curtin & Fossey, 2007). Thematic analysis is a widely utilized qualitative approach that allows for flexibility while simultaneously providing a step-by-step guide (Braun & Clarke, 2006). Qualitative data was not available for the LBI Cohort; therefore, only the TBL data was presented. The study received exempt status from the appropriate Institutional Review Boards.

Participants

The participants included a convenience sample of consecutive cohorts of first-year professional occupational therapy students at an accredited entry-level occupational therapy program (Portney & Watkins, 2015b). Each cohort was a mix of undergraduate seniors and first-year master's students and all students in each cohort were entered into the study.

Instruments

Quantitative data were obtained from the grade book section of the course learning management system and consisted of a mid-term examination, final examination, and final percentage grades. The final percentage grades included ten readiness assurance quizzes, ten group quizzes, two team analysis papers, and one individual analysis paper. The primary researcher then exported the data in spreadsheet form for collection and analysis. After a de-identification procedure, the data was entered into IBM SPSS (Version 25.0.0.1, IBM Corp., Armonk, NY) for analysis.

Qualitative data were derived from the student course evaluation comments, a post-course assessment. The survey, developed by Explorance Corporation, was administered by the university in a paper format for Cohort A and in an online format for Cohort B. Student evaluation data for Cohort A was not available as the previous paper system for evaluations was not archived. Cohort B answered the following open-ended question: "Please write below any comments or suggestions related to course content,

grading or structure". The narrative responses from the open-ended question were analyzed using thematic analysis to determine the student perceptions of TBL through comments on course structure and design.

Intervention

The human movement class was a four-credit-hour lecture accompanied by a separately graded, one credit hour laboratory. The class met twice per week for 80 minutes over fourteen weeks. The accompanying lab met once per week for 180 minutes over eleven weeks. The laboratory component of the course was not included in the study as team formation could not remain consistent due to section schedule. Both cohorts took the course at the same point in the curriculum sequence and were instructed by the same faculty member. Further, both cohorts had the same prerequisite requirements and course load.

Cohort A (n=70) received standard LBI using slide presentations following assigned readings. The instructional method included large group discussion, in-class videos, and demonstrations which did not require active student participation. Quantitative assessment of student performance included: a mid-term and final examination, two team biomechanical/activity analysis projects using a random selection method of group formation, and one individual environmental assessment project.

Cohort B (n=66) received a modified team based instructional method (MTBL). Our modification of standard TBL used graded polling questions for the IRAT to permit more immediate feedback at the end of the IRAT testing. All other components of TBL were employed in the standard fashion described by Michaelsen et al. (2008). Team construction occurred during the first week of class. Each student completed a pre-existing knowledge assessment and a VARK learning inventory on the first day of class. Students were ranked on a progressive scale for kinesiological knowledge and learning style preference was determined using the VARK scale (Fleming & Mills, 1992). The course instructor then carefully balanced each team of five to six students by kinesiological knowledge to ensure heterogeneity of knowledge (Fink, 2002; McMahon, 2008), and representation of each learning style preference. Once formed, teams remained intact for the entire semester (Fink, 2002).

The MTBL consisted of assigned video lectures and readings, brief lectures and clarification of pre-assigned readings and videos, and in-class team-based content application activities. Quantitative assessment of student performance included: a mid-term and final examination, individual readiness assurance quizzes using I-clicker polling technology, team quizzes, two team biomechanical/activity analysis projects, and one individual environmental assessment project.

The course evaluation instrument became available to students of both cohorts during the final two weeks of class, and participation, while strongly encouraged by the instructor, was voluntary. Cohort A received the instrument in paper format, and Cohort B accessed and completed the instrument online. As such, the course evaluation data

for Cohort A was not available for this review. The instructor was not present during survey completion, and students were not offered an incentive to complete the survey.

Data Collection

A graduate assistant downloaded archived grade book data for each cohort and exported the data into a spreadsheet. The graduate assistant then de-identified the quantitative data by removing names and assigning random numerical values which could not be associated with any individual student. Finally, the graduate assistant downloaded the narrative data for Cohort B and prepared it for analysis by extracting the anonymous responses from the open-ended question.

Data Analysis

Quantitative Analysis

The quantitative analysis employed descriptive and non-parametric statistical methods. The mean and standard deviation in addition to the grade distributions of both groups were calculated and equal variances were noted. Therefore, an unpaired t-test using an alpha value of 0.05 was employed for all analyses (Portney & Watkins, 2015a).

Qualitative Analysis

Two members of the research team coded all student comments regarding course design, course content, and satisfaction with the teaching methods and employed thematic analysis in the manner described by Braun and Clarke (2006). This method is an inductive approach using an interpretive process for data analysis. Braun and Clarke (2006) outlined a six-step thematic analysis process that provides guide for a systematic approach to analysis. The researchers followed this sequence: immersion in the data by reading each student evaluation multiple times (step 1) and creating margin notes during the reading. Codes were then generated by working with the words and identifying relevant student comments (step 2). The codes were then categorized and organized into lists. The lists of categories were analyzed permitting initial theme generation (step 3). The initial themes were further refined by rechecking the codes for each theme to ensure there was a coherent pattern for each theme. Themes were subsequently reviewed for consistency with the data set (step 4). Themes were defined, clarified, and reviewed via visual mapping leading to the development of the final themes (step 5). Step 6 included report production and provision of a thick description of the analysis process.

Member checking strategies were employed to increase trustworthiness of the data (Creswell & Poth, 2018). Acceptance and enthusiasm found in the student evaluations for TBL were noted during the member checking process. While actual data was not shared with the students due to concerns regarding anonymity, student feedback was solicited regarding the course objectives, structure, teaching methods, and assessments. Student feedback was consistent with the reported findings. Trustworthiness was also addressed through researcher triangulation (Curtin & Fossey, 2007). The coding and theme development were completed independently by the first and third author. Following a debriefing session with the second author, an experienced

qualitative researcher, the researchers confirmed the themes that emerged from the student evaluations. Another strategy employed to increase trustworthiness was reflexivity (Creswell & Poth, 2018). As the instructor for both classes and the creator of the TBL designed class, the primary researcher noted potential bias through annotations during the coding process.

Results

Quantitative Findings

Following data analysis, we determined the mean and standard deviation for the mid-term, final examination, and final course grades for Cohort A, LBI (n=61) and Cohort B, TBL (n=69). We used SPSS (Version 25.0.0.1, IBM Corp., Armonk, NY) for statistical analysis. Please refer to Table 1.

Table 1

Comparative Mean/SD

	LBI: Cohort A			TBL: Cohort B		
Midterm Examination	M=87.67	SD=7.93	P=0.00	M=78.4	SD= 9.80	P=0.00
Final Examination	M=79.80	SD=7.00	P=0.00	M=74.51	SD= 9.18	P=0.00
Final Course Grade	M=88.66	SD=3.92	P=.562	M=88.3	SD= 3.29	P=.562

Note M=Mean, SD=Standard Deviation, P=P-value

Subsequently, we performed an independent samples *t*-test (p<0.05) at a 95% confidence interval. Levine test for equality of variances was .116 for the mid-term examination, .075 for the final examination, and .082 for the final course grade indicating that equality of variance was assumed for the three comparisons. Students receiving LBI in Cohort A had higher mid-term scores (M=87.7, SD=7.9) than those receiving TBL in Cohort B (M=78.4, SD=9.80) *t*=5.896, p=.000. Final examination scores were also higher for LBI (M=79.8, SD=7.00) than TBL (M=74.51, SD=9.18) *t*=3.665, p=.000. However, the final course grade score showed no significant difference between LBI (M=88.6, SD=3.92) and TBL (M=88.3, SD=3.29) *t* =.581, p=.562.

Qualitative Findings

We coded thirty-three student replies and developed three themes through thematic analysis (Braun & Clarke, 2006): (1) team-based learning helped reduce academic stress, (2) testing and competency assessment was effective in engaging students, and (3) student perception of team learning was positive. See Table 2.

Table 2

Qualitative Themes and Exemplary Quotes

Theme	Example 1	Example 2	Example 3
Reduced academic stress	"I believe putting us in groups based on our initial quizzes was beneficial to 99% of the class."	"We could help each other when we were struggling."	"The ability to collaborate and share information made the class less intimidating."
Effective testing and assessment	"The weekly quizzes made us keep up with the material."	"I enjoyed collaborating on the group quizzes to go over the information."	"The group quizzes and the group work helped to learn the material more effectively."
Positive student perception	"I never learned so much information so efficiently in one class."	"The structure of the course was laid out and organized in a manner that flowed smoothly."	"I liked the structure of the class. We never had a full class of just lecture."

Theme 1: Team-based Learning Helped Reduce Academic Stress

Students described learning from their peers as more comfortable and less stressful than engaging with the professor or the graduate teaching assistant. Sixteen students specifically described the team structure as fun and students reported that they enjoyed working with their peers both in assignment completion and testing. Comments such as "we could help each other when someone was struggling" and "the ability to collaborate and share information made the class less intimidating" were representative of the students who commented about TBL structure.

Fourteen students also mentioned the stress associated with the class and how the team construction employed was helpful. One student stated, "I learned a lot and enjoyed the class even though it brought me a lot of stress. I believe putting us into groups based on our initial quizzes was beneficial to 99% of the class." Another student commented, "the course content was challenging, but the organization of the course and the presentations were organized in a way that met my learning style." A third student noted, "it was an encouraging environment for learning, and the structure helped set up the students for success." Finally, a fourth student reported, "when first starting this course in September, I was nervous that I would not be able to comprehend everything presented. However, this course allowed me to adjust my learning style as a developing student."

However, not all students found TBL useful as four students commented negatively about the classroom environment and group size. Statements such as "classroom felt too crowded for the number of students in the room. This made working in groups difficult," and "I thought the groups were too large. There were seven people in my group and writing the group paper was definitively a challenge to coordinate" were noted.

Theme 2: Testing and Competency Assessment Were Effective

Eighteen students commented on the readiness assessment and the use of group quizzing following the readiness assessment. The group quiz and graded pre-class polling questions for readiness assurance were sited specifically as appropriate and effective testing methods. One student stated that "the weekly quizzes made us keep up with the material" while another reported that "the group quizzes and the group work helped to learn the material more effectively." Other statements of support for the I-clicker polling for readiness assurance and the quiz structure included: "I liked how we had I-clicker questions for each class. I liked how we did our quizzes in groups. I think it was really helpful to put our heads together and reason out answers to some of the very difficult questions." Another student offered, "having quizzes and clicker questions each week was helpful so that you stayed on top of material" and another stated, "I enjoyed collaborating on group quizzes to go over information" and finally, "I believe clicker questions should continue being done this way for future classes."

Two students reported dissatisfaction with the use of polling for readiness assessment. They stated "it was a lot more helpful to do the clicker questions at the end of the lesson rather than before. I also prefer 60 seconds to complete the question" and "having so many people work on the quizzes each week was not always effective."

Theme 3: Student Perception of the Course was Positive

Nine students commented directly on course structure. Seven students commented positively and two negatively. Positive comments included, "I never learned so much information so efficiently in one class" and "the structure of the course was laid out and organized in a manner that flowed smoothly." Other students noted "I think the layout of the course worked extremely well," "the class was fast-paced and set up efficiently" and "I liked the structure of the class. We never had a full class of just lecture." Finally, a student offered "the course content, grading and structure were clear and organized."

Not all the students were pleased with the course structure. Two students presented an unfavorable view of the course structure. One student stated "the course felt a bit disorganized. It was often unclear what was expected from us." A second student felt the course was overwhelming asserting that, "this class covered a lot of material and was very overwhelming. I found the content to be difficult, and I spent a lot of time working on this class."

Discussion

The purpose of this mixed method study was to use a two group, retrospective quasi-experimental and broad qualitative design to compare the education outcomes of LBI to TBL in successive cohorts of occupational therapy students. The quantitative findings revealed that mid-term and final examination scores were higher in the LBI Cohort. However, the final grade performance of the cohorts was identical. The final grade performance of the cohorts suggests that LBI and TBL were equally effective at producing satisfactory educational outcomes.

Multiple choice testing is useful for information within the knowledge dimension of Bloom's taxonomy, particularly factual and conceptual knowledge (Anderson & Krathwohl, 2001). This domain of knowledge is an important component of the human movement course. Therefore, multiple choice testing has a place in the course, regardless of the instructional method used. The superior testing performance of the LBI group contrasts with previously reported studies that indicate multiple-choice testing performance is increased with TBL (Cheng et al., 2014; Ulrich et al., 2017). A possible explanation for this finding is the phenomena described as "social loafing" (Michaelsen & Knight, 2002; Peterson, 2012). Peterson (2012) described social loafing as a decrease in individual effort in the presence of others. Individuals may consciously or unconsciously reduce their efforts when their reduced effort is not easily identified. The team grade, therefore, masks the individual's lack of performance (Peterson, 2012). While review of the written peer assessments that are performed as part of the TBL method used for Cohort B did not indicate the presence of social loafing, Meyers et al. (2009) found that most college students approach unfair workload by avoidance. It is possible that despite careful team construction, social loafing and conflict avoidance behavior may have resulted in inconsistent individual test performance. Stein et al. (2016) proposed including a graded peer assessment as a tool to increase student accountability to team members. This strategy was not employed in our study and may be a useful tool in future TBL research and course design.

In the TBL Cohort, small group activities emphasizing application and analysis were regularly featured during class time. The classroom activities challenged higher order learning described by Bloom's cognitive process dimension (Anderson & Krathwohl, 2001). The increased scores for group activity and biomechanical analysis projects in the TBL Cohort suggest that TBL may be more effective than LBI in the development of cognitive processes and may facilitate critical thinking and reasoning. These findings indicate that TBL does not compromise overall student performance and TBL may facilitate higher-level cognitive processes.

Qualitative themes of TBL identified were a reduction in academic stress, effective testing and competency assessment, and positive student perception of team construction. The occupational therapy students were under a degree of academic stress due to the need to maintain a 3.0 GPA in occupational therapy course work. Further, students faced academic review if they obtained more than two B minus grades in courses in the major. The human movement class was a five-credit course which contained difficult scientific and biomedical content. Further, the students reported the

Human Movement course to be among the most difficult in the major on post-graduation surveys. Students have also reported being highly stressed by the course demands. Finally, the course occurs early in the curriculum sequence of the courses in the major, meaning an early B minus increases the academic pressure on the student. The students in the TBL Cohort recognized that a course structured to support multiple types of learning, and increased peer resources might increase their chances of success thereby reducing academic pressure and stress.

A significant feature of a TBL classroom is the RAT. Previous research indicates that occupational therapy students are uncomfortable with the readiness assessment component of TBL design (Epstein, 2016; Zachry et al., 2017). Therefore, the acceptance of the assessment measures of the TBL Cohort differs from the previous reporting and argues for the acceptance of the TBL approach. A possible explanation for student acceptance of the assessment measures may be team construction. The use of multiple assessment methods may resonate with teams that are constructed by balancing pre-course kinesiological knowledge and learning styles. Heterogeneity of learning style in team construction may balance the strengths of the team members over the demands of different types of assessment. Another feature of TBL classes is the de-emphasis on multiple-choice test performance. TBL may allow students with testing issues to demonstrate competency in other ways such as in-class group activities.

The overall positive response of students to TBL contrasts with previous literature demonstrating a preference for LBI. Medical students assessed for preference of active or passive learning methods demonstrated that content delivery was equally effective. The students valued classes using passive LBI more than active, TBL classes (Haidet et al., 2004). However, the variable of team construction methods was not controlled in this study, suggesting that team construction may play a role in explaining the positive perceptions of the TBL Cohort.

Limitations
A significant limitation was sample uniformity. The cohorts in the study were mixed between graduate and undergraduate students. The difference in educational experience levels among the students may have affected the effectiveness of the instructional methods used. Therefore, the generalization of results are limited (Portney & Watkins, 2015b). Additionally, the quasi-experimental design of the study further limits generalization of results (Portney & Watkins, 2015a). Further, the quantitative component of the study is subject to selection bias. However, the relatively large samples in each cohort, and the uniform characteristics of the sample help to control for selection bias in the quantitative component. A possible confound of our study is the quality of course instruction provided in the TBL Cohort. The instructor was inexperienced in the use of TBL techniques. Instructor guidance is necessary to bridge the gaps between assigned readings and class content (Alvarez-Bell et al., 2017). Therefore, instructor inexperience may have caused less than optimal instructor guidance during the implementation of the TBL class. The qualitative component was limited by the rate of student participation. The survey was voluntary and there was no

control over who completed it. Further, the instrument used to collect the data used open-ended questions. A semi-structured approach could have improved the quality of the data. The lack of ability to use a follow up interview for clarification limits the depth of the information and prevents generalization of the results.

Implications for Occupational Therapy Education
Our study demonstrates that the TBL instructional method is as effective in attaining overall learning goals as LBI although there is a slight favorability towards LBI in student performance in multiple choice testing. However, our quantitative results for final grades do not suggest superiority of either instructional method. Therefore, occupational therapy educators could expect attainment of learning objectives using either instructional method when designing human movement/kinesiology based courses. Further, student perception of TBL was generally positive which contrasts with previous occupational therapy literature (Zachry et al., 2017). This suggests further qualitative research using structured or semi-structed interviews may be helpful in developing a more comprehensive understanding of occupational therapy student's perception of TBL.

Conclusion
Team-based learning is a viable method for occupational therapy educators to use in human movement/kinesiology bases courses. While our study did not demonstrate a significant difference in educational outcomes between LBI and TBL, LBI resulted in higher multiple-choice testing scores. The study demonstrated that occupational therapy students can have a positive perception of the TBL instructional method in human movement/kinesiology course work. Further investigation is needed to determine if positive student perceptions regarding TBL are consistent across an occupational therapy curriculum.

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