



PROPOSAL FOR NEXUS LEARNING GRANT PHILADELPHIA UNIVERSITY

The Effects of RATs and TBL in the Classroom as a Means to Promote Student Preparedness and Integration of Key Academic Concepts



Title:**The Effects of RATs and TBL in the Classroom as a Means to Promote Student Preparedness and Integration of Key Academic Concepts****Project Abstract:**

The students enrolled in the Occupational Therapy program are assigned many readings each week to prepare for in class lecture topics including about 100 pages per course. Students' compliance with completing reading assignments before class is low and they are not prepared for class, creating the situation where the professor needs to spend the majority of class lecturing on the key concepts of the readings. Application and integration activities in class become very limited. The purpose of this study will allow this author to continue gathering additional information and data that would adjoin the evidence that was previously collected that showed positive correlations to the utilization of Readiness Assessment Tests (RATs) and increased understanding of key concepts in the readings. In addition, this would allow for introduction of team based learning concepts in flipping the classrooms from lecture based to collaborative learning environments. It is hypothesize that by implementing this project, positive effects of the RATs on understanding concepts from the readings, summative test scores and student's motivation to complete the readings in three OT courses will be quantified. While this study will be occurring in the OT program there are wide applications to all programs at Philadelphia University.

Explanation of how the Project Advances Nexus Learning:

Compliance by students to complete the assigned readings has steadily declined over the years (Clump, Bauer & Bradley, 2004). Completion of assigned textbook readings before a lecture allows for a better understanding of the materials presented and increases in class participation among students (Gurung, 2003; Narloch, Garbin & Turnage, 2006; Ryan, 2006). Most commonly, students are assigned textbook readings before class because it is extremely difficult to present all necessary materials during class time (Ryan, 2006). Azorlosa and Renner (2006) reported that students who missed regular pre-lecture quizzes scored lower on comprehensive final tests and had more overall class absences. In order to increase pre-reading assignment compliance, one identified technique is quizzing students on these assigned readings (Brothen & Wambach, 2004; Narloch, Garbin & Turnage, 2006).

Occupational therapy faculty found that if students do not complete the required readings before class, it disrupts the flow of the in class lecture and much time is spent going over concepts that were in the readings. Ultimately, little time is spent on application of knowledge because the students have not begun to synthesize the materials. This author would like to investigate whether RAT's have any impact on summative test scores within a course, any increase in overall grades in OT courses, and utilize them as a way to introduce and incorporate team based learning (TBL) by flipping the classroom from almost entirely lecture based to a collaborated, engaged, active learning, and real world environment. Koles et al. (2010) described TBL as a means to foster individual and group accountability as small groups of students work together to answer questions posed to them by an instructor. TBL employs a three-phase sequence that is structured to include preparation, readiness and application.

For this project, a combination of both in class and online quizzing will be utilized. Data will be collected in three courses over a year timeframe in OCC 623 (Applied Neuroanatomy) OCC 748 (Adult Assessment and Intervention) and OCC 626 (Evidence Based Practice). An individual RAT (iRAT) will be administered prior to class, following which students use a team approach to debate and collaborate on the quiz questions. Each team will then complete a second RAT (tRAT) together for submission based on their discussions. This will then be followed by clarification of only that content students are still struggling to understand and application of knowledge to real life case scenarios with clients and patients.

Specific Project Goals and Learning Outcomes:

While this project is being conducted in the OT program, this teaching and learning pedagogy has wide applications to all programs throughout Philadelphia University. The information gathered from this study will be disseminated to other interested faculty members through a workshop sponsored by the Center for Teaching Innovation and Nexus Learning. The insights and evidence-based results of this study will foster a greater acceptance and use of RATs and TBL as an active and engaged pedagogy across all disciplines of the University.

The goal of this project is to evaluate whether the use of RATs and TBL within the Occupational Therapy classroom promotes:

- Students' motivation to complete assigned readings prior to class, requiring less professor directed lecture time devoted to key concepts in readings.
- Increased understanding of key academic concepts from the readings) allowing for additional application type learning around patient case scenarios and real life examples.

- Enhanced student participation in more active and application centric activities.
- Increased students' summative test scores in the courses.
- Increased student ability to work in team based groups in a productive manner simulating real life work scenarios.
- Decreased instructor's needs for lectures and promotes active pedagogy using face to face collaborative based learning.

Description of Activities and Timeframe:

The following is the proposed structure of administering RATs and utilization of TBL in one course in each semester of the fall, spring and summer semesters for the academic year 2014-2015:

- In the fall semester of 2014: OCC 748: Assessment and Interventions: Adults
 - Second Year MSOT students (approximately 30 students)
 - 6 RATs given with 10 questions each
 - Utilization of TBL with team discussion and retake of RAT
- In the spring semester of 2015: OCC 623: Applied Neuroanatomy and Summer 2015: OCC 626: Evidence Based Practice
 - First Year MSOT students (approximately 35 students)
 - 6 RATs given with 10 questions each
 - Utilization of TBL with team discussion and retake of RAT

Analysis of results would be completed after each semester with a final summary of results completed by September 2, 2015.

Project Assessment:

Project Assessment will include a student's perception survey administered via survey monkey regarding how RATs influenced their understanding of key academic concepts from the reading, promoted them to read and come to class more prepared, and helped them prepare to

participate in TBL activities. It will also include perceptions on how TBL promoted their understanding of mastering content in the course and application to real life patient/client scenarios. In addition, quantitative data will be collected to make a potential correlation to support current evidence that there is a significant advantage to utilizing RATs to improve summative scores in a course. Journaling will be done by the instructor to identify qualitative themes on utilizing RATs and TBL as a means to support a collaborative learning classroom vs. traditional lecture based learning.

Documentation/Dissemination Plan:

Results of this study will be disseminated through proposals and acceptance to present at conference such as the National American Occupational Therapy Association conference and education conference, Pennsylvania Occupational Therapy Association conference, National Conference on Higher Education (NCHE) and/or other local educational conference opportunities to promote Philadelphia University's approaches to Nexus Learning. It is also anticipated that a manuscript will also be written for consideration for publication in either the education or occupational therapy literature, where there is currently no published studies on this topic. That will be determined once the data are collected and analyzed to determine the most appropriate publication venue. Finally, if data from this year long project continues to show strong evidence that RATs and TBL are an effective teaching and learning tool, further funding from external sources (e.g. American Occupational Therapy Foundation) would be vied for.

Project Personnel:

The only other proposed project personnel is a graduate assistant student, who will be identified if this project is funded. They will be utilized for a total of 25 hours for the project for survey research, data collection and management tasks.

References

- Azorlosa, J.L., & Renner, C.H. (2006). The effect of announced quizzes on exam performance. *Journal of Instructional Psychology, 33*(4), 278-283.
- Brar, M.K., Laube, D.W., & Brett, G.C. (2007). Effect of quantitative feedback on student performance on national board medical examination in an obstetrics and gynecology clerkship. *American Journal of Obstetrics & Gynecology, 197*, 530e1-530e5.
- Brothen, T. & Wambach, C. (2001). Effective student use of computerized quizzes. *Teaching of Psychology, 28*, 292-294.
- Clump, M. A., Bauer, H., & Bradley, C. (2004). The extent to which psychology students read textbooks: A multiple class analysis of reading across the psychology curriculum. *Journal of Instructional Psychology, 31*(3), 227-232.
- Daniel, D.B. (2004). Using web-based quizzing to improve exam performance: Lessons learned. *Teaching of Psychology, 31*(3), 207-208.
- Gurung, R. (2003). Pedagogical aids and student performance. *Teaching of Psychology, 30*(2), 92-95.
- Hadsell, L. (2009). The effect of quiz timing on exam performance. *Journal of Education for Business, 84*(3), 135-140.
- Kibble, J. (2007). Use of unsupervised online quizzes as formative assessment in a medical physiology course: Effects on incentives on student participation and performance. *Advances in Physiology Education, 31*(3), 253-260.
- Landrum, R.E. (2007). Introductory psychology student performance: Weekly quizzes followed by cumulative final exam. *Teaching of Psychology, 34*(3), 177-180.
- Marks, B.P. (2002). Web-based readiness assessment quizzes. *Journal of Engineering Education, 91*(1), 97-102.
- Michaelsen, L.K., Knight, A.B., & Fink, L.D. (2004) Team-based learning: A transformational use of small groups in college teaching. Sterling, VA: Stylus Publishing.
- Narlock, R., Garbin, C.P., & Turnage, K.D. (2006). Benefits of prelecture quizzes. *Teaching of Psychology, 33*(2), 109-112.
- Olson, B.L., & McDonald, J.L. (2004). Influence of online formative assessment upon student learning in biomedical science courses. *Journal of Dental Education, 68*, 656-659.
- Padilla-Walker, L.M. (2006). The impact of daily extra credit quizzes on exam performance. *Teaching of Psychology, 33*(4), 236-239.
- Roles, P.G., Stolfi, A., Borges, N.J., Nelson, S.,& Parnelee, D. (2010). The impact of team based learning on medical students' academic performance. *Academic Medicine, 85* (11), 1739-1745.
- Ryan, T.E. (2006). Motivating novice students to read their textbooks. *Journal of Instructional Psychology, 33*(2), 135-140.
- Stull, J.C., Majerich, D.M., Bernacki, M.L., Barnum, S.J., & Ducette, J.P. (2011). The effects of formative assessment pre-lecture online chapter quizzes and student-initiated inquiries to the instructor on academic achievement. *Educational Research and Evaluation, 17*(4), 253-262.
- Weinstein, S.E. & Wu, S.W. (2009). Readiness assessment tests versus frequent quizzes: Student preferences. *International Journal of Teaching and Learning in Higher Education, 21*, 181-186.