Effects of Test-enhanced Learning on Promoting Student Learning Outcome

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Introduction

Research in cognitive science suggests that tests can enhance student information retention through effortful retrieval of information, a phenomenon called the test effect or test-enhanced learning. Test-enhanced learning has drawn a lot of attention in the healthcare professional education recently due to the strength of effective recall knowledge leading to improve expertise. In addition, previous studies suggested information retrieval practice using testing may facilitate learning of later materials, not just limited to rote memory. Currently, most studies focus on rote memory recall. However, few study, if any, focuses on the effects of test-enhanced learning on the summative/comprehensive assessments.

Objectives

The purpose of this study was to evaluate the effects of test-enhanced learning on student learning outcome in an online health assessment course. Mid-term and HESI final comprehensive exams were used as the index of learning outcome.

Method

A quasi-experimental design with a convenient sampling strategy was used in this pilot study. Seventy-four RN-BSN students (N=74) enrolled in an online health assessment course in spring and summer semesters 2015 were invited to participate voluntarily in one of the two groups: Test-enhanced group and study-only group. In test-enhanced group, students had access to two hundred practice questions without answers for 2 weeks before the mid-term. Those practice questions only covered the content for mid-term exam. For the study-only group, students had standard learning materials and served as a control group (Figure 1). No practice question was offered between mid-term and final exams. Instructors developed mid-term exam with questions different from the practice questions. HESI standardized exam on health assessment was used for final exam. Scores from mid-term and HESI final exams were analyzed to evaluate if test-enhanced learning has effects on student learning outcome for a health assessment course.

Results

Of 74 participants, 58 chose the test-enhanced learning group and 16 chose the study-only group. For the mid-term exam, students in the test-enhanced group performed significantly better than the study-only group (t(72)=3.56, p<.01) (Figure 2). For final exam, test-enhanced group (Mean= 91.4) performed better than study-only group (Mean= 84.9) in the final examine but not significant (Figure 2).

Discussion & Conclusions

The results support that test-enhanced learning significantly improves assessment scores that has positive effects on student learning outcome. The possible explanation is that students in test-enhanced group had the opportunity to engage active learning to promote a higher level of understanding because they need to actively retrieve and comprehend the information through practice questions. Further studies are needed to investigate the effects in a larger population.

References available upon request