

Student-Generated Practice Exams to Engage Learners in Learning

Alice M Teall, DNP, APRN-CNP, FAANP teall.3@osu.edu
Kate Gawlik, DNP, APRN-CNP, FAANP gawlik.2@osu.edu



1

Presentation Overview

OBJECTIVES

- Evaluate the impact of retrieval practice on learning, study habits, self-confidence, and test anxiety
- Determine the efficacy of student-generated practice exams as a learning strategy



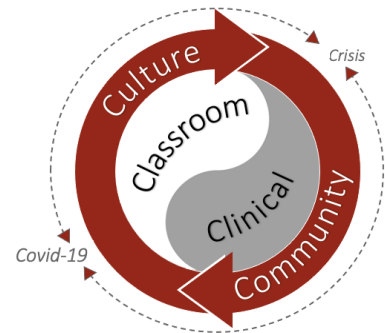
2

Background



Health and Wellness of Nursing Students

- Anxiety
- Uncertainty
- Burnout
- Stress of Clinical Practice
- Academic Stressors
- Excessive workload
- Long hours
- Isolation



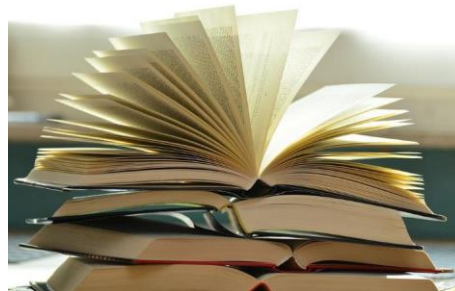
3

Challenge for Nurse Educators



Require students to...

- Meet competencies (demonstrate KSAs) to provide care for patient populations
- Develop critical thinking
- Integrate skills for life-long learning
- Be “prepared” for practice



4

Best Practices: Engagement Active Learning



Retrieval practice

- Powerful, evidence-based teaching strategy
- Strategy of recalling facts, concepts, events to enhance learning
- Classic example: flash cards
- Increases long-term retention, metacognition
- Effective across age groups and subject domains
- Engages students in practice activities



5



*How do students prepare for exams?
What teaching strategies are effective in promoting active learning?
Are students engaged in retrieval practice?*

6

PURPOSE of Project: Engage students in retrieval practice through creation of multiple-choice questions

- Engage in active learning
- Aid in metacognition
- Improve self-efficacy



7

Limited evidence for BEST PRACTICE using retrieval practice through creation of multiple choice questions (MCQs)

- Studies involving health professional students across disciplines have found that writing MCQs has a positive effect on learning, study habits, and self-confidence, with a reduction in test anxiety
 - Higher levels of engagement in question writing are correlated with motivation and active learning
 - Creating a high-quality MCQ requires deep content knowledge and integration
- However, student beliefs about writing MCQs as a learning strategy are not overwhelmingly positive, and levels of engagement have been mixed

1. Grainger R, Dai W, Osborne E, Kenwright D. (2018). doi:10.1186/s12909-018-1312-1
2. Herrero JI, Lucena F, Quiroga J. (2019). doi:10.1186/s12909-019-1469-2
3. Hudson SL, Jarstfer MB, Persky AM. (2018) doi:10.5688/ajpe6315
4. Kurtz J, Holman B, Monrad SU. (2020). doi:10.15766/mep_2374-8265.10986
5. Nguyen KA, Lucas C, Leadbeatter D. (2020). doi:10.1111/eje.12536
6. Shakurnia A, Aslami M, Bijanzadeh M. (2018). PMID: PMC5856907

8

PURPOSE of Project: Engage students in retrieval practice through creation of multiple-choice questions

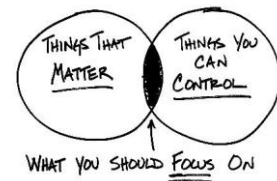
- 71 graduate students enrolled in online advanced assessment course
- Offered the opportunity to write multiple choice questions and review the resultant student-generated exam as an optional learning strategy to prepare for midterm and final exams
- A confidential post-intervention survey of all students assessed their perspectives about the strategy as a study tool

Voluntary Participation



9

Students were offered a micro-learning lecture about mindset, study habits, and active learning



ANATOMY OF A MULTIPLE-CHOICE QUESTION

- Stem → Which common primary skin lesion is best described as a circumscribed, elevated, fluid-filled lesion less than 0.5 cm in diameter?
- Alternatives →
 - A. Bulla
 - B. Papule
 - C. Pustule
 - D. Vesicle
 → Distractors
 → Answer
- Rationale → Correct answer: D
 Rationale: Vesicles are circumscribed, elevated, fluid-containing lesions, less than 0.5 cm in greatest diameter, which may be intra-epidermal or sub-epidermal in origin. Bullae are similarly defined, except that the lesions are more than 0.5 cm in diameter. Papules are solid, raised lesion up to 0.5 cm in greatest diameter. Pustules are circumscribed, elevated skin lesions containing purulent fluid.

10

Methods



- Students submitted two MCQs 7-10 days prior to their course exams based on exam content
 - Assignment did not require expertise in question writing, and MCQs were not evaluated for format
 - Faculty reviewed questions & rationale for accuracy
- Each student-generated exam (SGE) was created from submitted questions
 - Students were sent the SGE three days prior to the exam if they had contributed MCQs
 - Advised that the practice exam was likely to be challenging, and would require them to apply/analyze content
 - Each SGE was provided as two documents, one with questions only & one with questions, answers, and rationale
 - Students could use the SGE as a study tool, without sharing their scores
 - No SGE questions were included on the course exams
 - The lead faculty responsible for generating the SGE was not the course lead

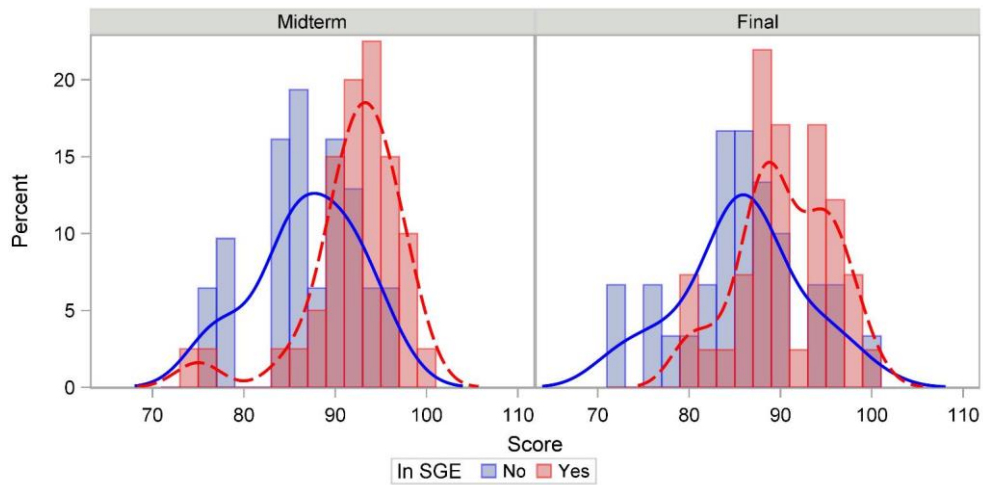
11

Participation



- Of the 71 students in the course, 40 (56%) participated prior to the midterm, and 41 (58%) participated prior to the final exam
- About 50% of the class (36 of 71) participated in both the midterm and final exam opportunities
- In the Qualtrics survey, students shared that they:
 - Experience some stress and nervousness when taking exams (79%)
 - Worry about how to study the material (55%)
 - Have anxiety during test taking that leads to overthinking (34%), physical symptoms (31%), mistakes on the exams (31%)
 - Believe that their study habits are significantly decreased because of worry about exams (10%)

12

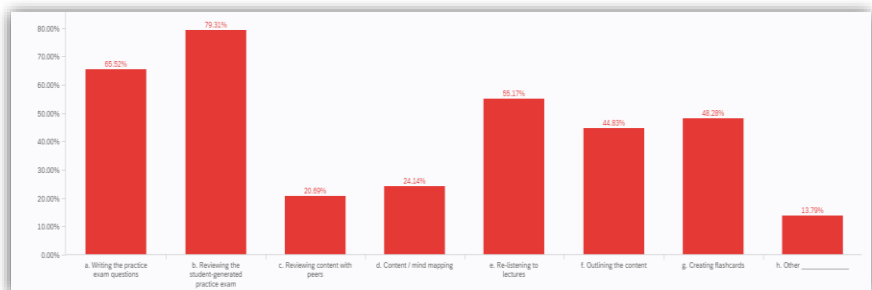


Participating in the student-generated practice exams increased the mean of midterm and final exam scores by 5.1 points (p value <.001)

13

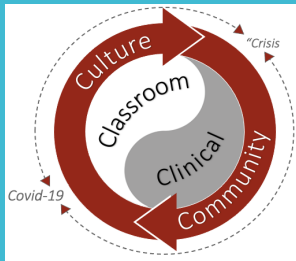
Student Survey Feedback

- Likelihood that you would generate exam questions as a learning strategy again?
 - 58% Definitely
 - 35% Probably or possibly
- What strategies did you find helpful for your learning in the advanced assessment course?



14

Student Feedback



- I think it is a great study tool!
- I love it, it's a great method. It's very time consuming, even for just one question
- I found this method to be extremely helpful. Not only did taking the practice test help with studying but creating the questions as well
- Helpful... in organizing a study prep plan as well as an integrated method of studying by breaking it down into smaller parts

15

CONCLUSION:
Student-generated practice exams
engaged learners in learning!



Alice M Teall, DNP, APRN-CNP, FAANP teall.3@osu.edu
Kate Gawlik, DNP, APRN-CNP, FAANP gawlik.2@osu.edu



16