Write to Learn: Multiple-Choice Question Generation as an Active Learning Strategy



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#### Introduction

 Concept: Students collaboratively write & develop multiple-choice questions (MCQs) after presented lecture content

#### •Steps:

- 1. Students receive **lecture** content
- 2. Students divide into small groups (3-5 people)
- 3. Students are assigned a specific topic from lecture & create an MCQ
- 4. Faculty provide formative feedback on clarity, relevance, &

#### Background & Rationale<sup>1-8</sup>

#### Challenges:

- Traditional lecture may promote passive learning & short-term retention
- o Students often prefer passive learning

#### o Research:

- Increasingly recognizing active learning 
   improved engagement & retention
- MCQ generation has shown promise in undergraduate, nursing, & medical students

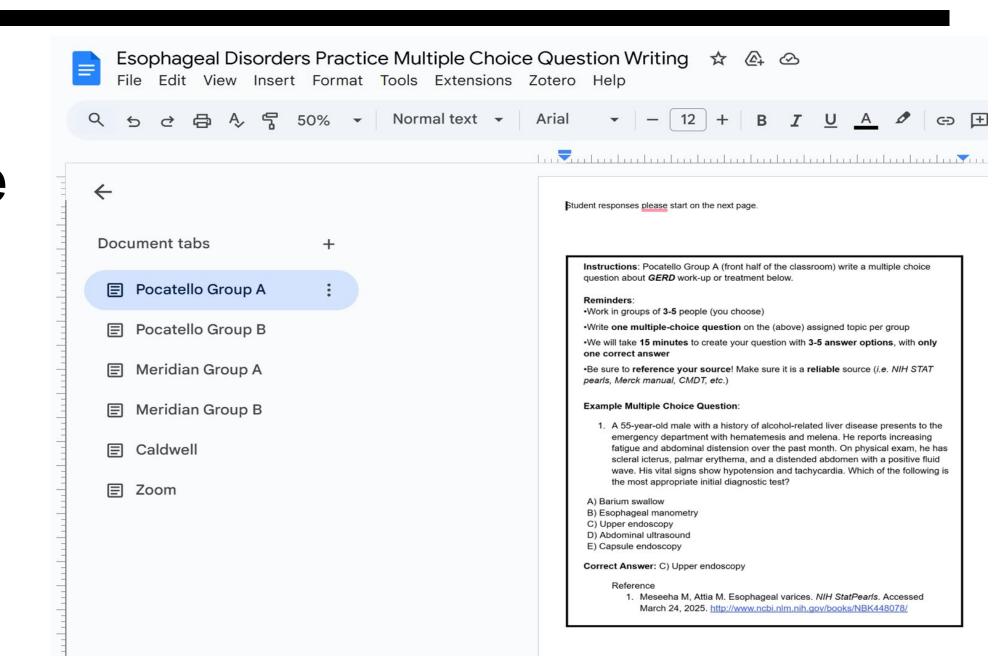
#### Why MCQs?

o It encourages higher-order thinking & it's active!

#### Interventional Design

- Course context: PAS 6637 Gastroenterology lecture on "Upper GI Disorders & GI Bleeds" (3 hours)
- Structure
  - 70-minute lecture on esophageal diseases
  - Students worked in small groups
  - At the end, a low-stakes ExamNow formative quiz was given covering <u>ALL</u>
     lecture-covered instructional objectives

# Using Google Docs



#### Student Generated MCQs<sup>4, 7-8</sup>

Document tabs Pocatello Group A Pocatello Group B Meridian Group A Meridian Group B Caldwell Zoom

Group1:

Names: Jon, Elizabeth., Alex., Ailee

Response:

CC: chest pain and hoarseness

A 35-year-old male presents to urgent care, feeling like he is having a heart attack after eating spicy chicken wings. He reports that this commonly happens after eating spicy food. He works in construction and takes NSAIDs daily to deal with chronic back pain from his job. He reports a family history of Hashimoto's thyroiditis in his mother. His father died from an MI at age 40. EKG, troponins, and BNP are all unremarkable. Which of the following is the most appropriate next step for this patient?

- A) Nitroglycerin
- B) Reassurance
- C) Upper GI series
- D) Omeprazole

Correct Answer: D) Omeprazole

Reference:

https://www.merckmanuals.com/professional/pediatrics/gastrointestinal-disorders-in-neonates-and-infants/gastroesophageal-reflux-in-infants

#### DY24 vs DY25 Quiz Outcomes

Metric	2024 (No Intervention)	2025 (+ MCQ Intervention)
Mean Score	64%	<b>78%</b>
Median Score	70%	80%
Low Score	0%	20%
High Score	100% (1 student)	100% ( <b>8 students</b> )
Participation	44/73 = 60.3%	60/69= <b>87%</b>

#### **Results Summary**

- Engagement: Strong student participation in the activity & quiz
- Formative Quiz Performance (10 questions): Better performance in <u>ALL</u> categories
- This demonstrated early evidence of improved knowledge retention
- All MCQs were subsequently reviewed & edited by faculty
- Students were able to use the MCQs as a study guide for their summative exam

# Implications<sup>1-8</sup>



# Student-generated MCQs may:

Reinforce learning
Improve exam performance
Foster confidence & engagement



# Feasible & scalable in health professions education

### Potential Barriers & Challenges<sup>1-9</sup>



TIME CONSTRAIN TS



COGNITIVE LOAD



FACULTY OVERSIGHT



STUDENT BUY-IN



TECHNOLOG Y LOGISTICS

#### **Future Directions**

01

CAN BE EXPANDED ACROSS MODULES & OTHER FACULTY 02

ASSESS IMPACT
ON STUDENTS'
HIGH-STAKES
NATIONAL
EXAMINATION
PERFORMANCE

03

EXPLORE
FACULTY &
STUDENTS'
PERCEPTIONS

# Key Takeaways for Educators



This strategy can enhance learners' engagement, retention, & performance



MCQs as an active learning strategy is **practical & adaptable** beyond the PA classroom



Generating MCQs = **learning tool** 

#### References

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