



Using a Buzzer System and Game-based Learning to Engage Osteopathic Medical Students and Apply Content

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Abstract

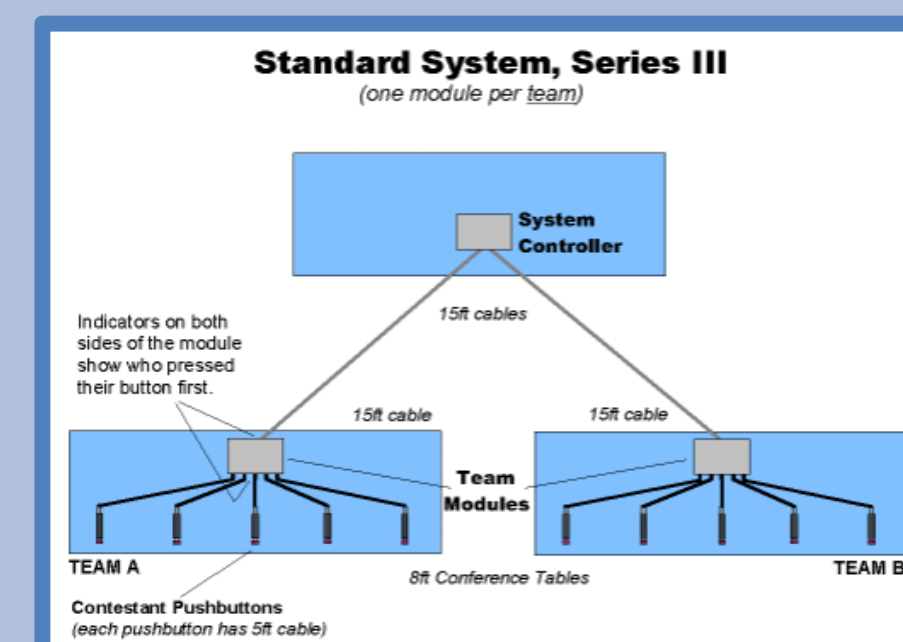
- The use of a buzzer system and game-based learning after delivering clinical-based medical content effectively take a student-learner from remembering and understanding medical knowledge to applying it to an immediate task.
- The required amount of relevant material for osteopathic medical students to develop a sufficient medical knowledge base is colossal.
- Frequently, medical students remain at the level of “memorization.”
- Game-based learning using a tactile buzzer system can increase the level of engagement of the material and emphasize key concepts at the end of instruction.

Introduction and Method

- Health professions educators have been implementing game-based learning into traditional didactic lectures to optimize students’ learning outcomes (AEJ van Gaalen 2021).
- Many lectures begin to implement interactive learning activities, and game-based learning can be shown in individual medical school settings to improve cognitive learning outcomes and provide a high positive motivational impact on learning (M Boeker 2013).
- For two “board review” lectures and one traditional clinical “didactic” lecture within a course, game-based learning using a tactile buzzer system was implemented for some or most all of the contact time.

Equipment

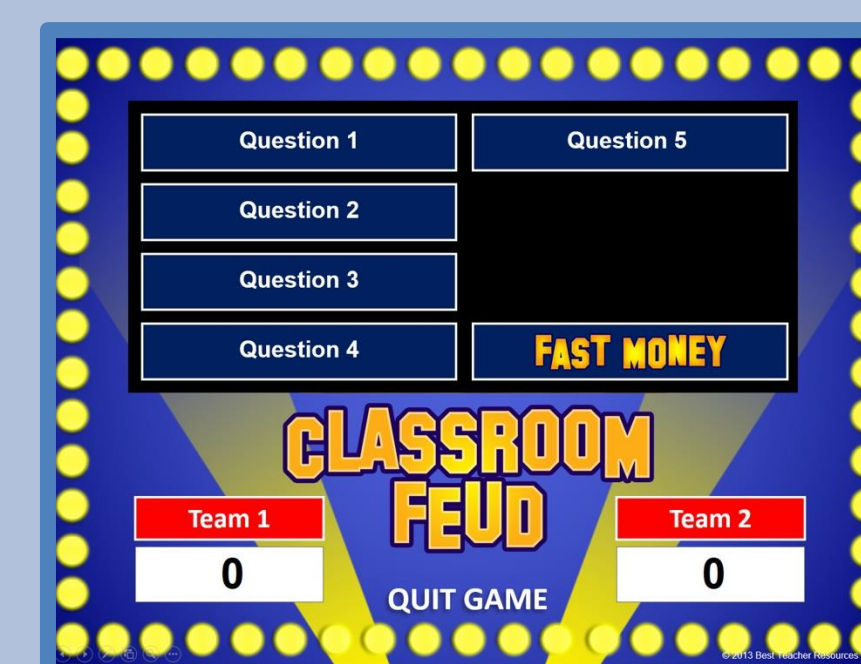
- The buzzer system used is a 4-team Team-box Quiz System from Novel Electronic Designs, Inc.
- Schematic and images courtesy of Novel Electronic Designs, Inc. (buzzersystems.com).



Resources

- The PowerPoint templates used were “Classroom Jeopardy” and “Classroom Feud” from Best Teacher Resources, available through Teachers Pay Teachers ([teacherspayteachers.com/Store/Best-Teacher-Resources](https://www.teacherspayteachers.com/Store/Best-Teacher-Resources)).
- Images courtesy of Best Teacher Resources. ([bestteacherblog.com](https://www.bestteacherblog.com)).

Acne	Newborn Nursery	Auto-immune	ID Derm	Hyper-sens.	Potent Potables
\$100	\$100	\$100	\$100	\$100	\$100
\$200	\$200	\$200	\$200	\$200	\$200
\$300	\$300	\$300	\$300	\$300	\$300
\$400	\$400	\$400	\$400	\$400	\$400
\$500	\$500	\$500	\$500	\$500	\$500
M. Mancoske	P. Postules	FINAL JEOPARDY	B.B. Bullard	W. Wheals	
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Results

Selected evaluation comments include:

“Board review sessions with Dr. Jones and Dr. Nelligan were PHENOMENAL. Definitely engaging and hits home content I needed to reinforce.”

“Would be helpful to work through cases with classmates during class and then discuss. Dr. McClelland and Dr. Jones' review cases were helpful in this area.”

Future Considerations

- Students have inquired borrowing the buzzer system for club activities outside the classroom.
- A “science bowl” event to invite and attract future applicants to the undergraduate college is possible with the equipment.
- Formal studies to validate an increase in engagement is warranted; this would dovetail into research affirming improved knowledge retention rates.

Selected References

- M Boeker, P Andel, W Vach, et al. **Game-based e-learning Is More Effective than a Conventional Instructional Method: A Randomized Controlled Trial with Third-year Medical Students.** *PLoS ONE* 2013;8(12):e82328
- AEJ van Gaalen, J Brouwer, J Schönrock-Adema, et al. **Gamification of health professions education: a systematic review.** *Advhealth Sci Educ Theory Pract* 2021 (26):683-711.