WELCOME!

PLEASE GET AN ANSWER SHEET AND A PEN BEFORE WE START. THANK YOU.

WHY DID YOU CHOOSE TO ATTEND THIS EVENT?

POLL EVERYWHERE:

1. Go to **PollEv.com**
2. Enter **SANDYNARCISO876**

1. Text **SANDYNARCISO876** to **37607**
2. Text in your message

Total Result

Powered by Poll Everywhere

https://PollEv.com/free_text_polls/L3Zyo6Y3vqrlWpJPsNIfx/respond

LEARNING CLINICAL SKILLS AND REASONING DOES NOT NEED TO BE A BORE: GAMIFICATION IN PA EDUCATION

SANDY NARCISO-OWEN (SHE/HER), M.S., M.S.P.A.S., PA-C
CLINICAL ASSISTANT PROFESSOR
DIRECTOR OF DIDACTIC EDUCATION

VICTORIA HO (SHE/HER), M.S.P.A.S., PA-C
ADJUNCT INSTRUCTOR

Sacred Heart UNIVERSITY

DISCLOSURES

We have no known potential conflicts of interest or financial disclosure in relations to this program/presentation.

LEARNING OBJECTIVES

- Recognize the importance of incorporating kinesthetic learning though gamification into PA curriculum with the focus on clinical reasoning, skills, and procedures.
- Discuss how participation in kinesthetic/gamification learning can improve understanding, retention, communication, and overall confidence within PA students.
- Formulate unique learning methods or techniques that best suits everyone's learning style.
- **HAVE FUN!** We will be asking for audience participation!

AGENDA

1. Discuss the foundation of kinesthetic/gamification learning
2. How PA programs and students can integrate it into their own PA curriculum
3. Display how SHU incorporated this into their PA curriculum as a fun event
4. Review data from pre- & post- surveys collected from SHU students during the event
5. Live demonstration (with audience participation)
6. Conclusions/take aways

WHAT IS KINESTHETIC LEARNING?

POLL EVERYWHERE:

1. Go to **PollEv.com**
2. Enter **SANDYNARCISO876**

1. Text **SANDYNARCISO876** to **37607**
2. Text in your message

Total Result:

Powered by Poll Everywhere

KINESTHETIC/GAMIFICATION LEARNING

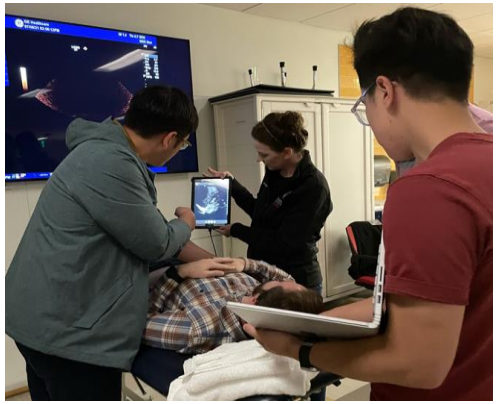
- Definition of kinesthetic learning: a learning style in which learning takes place by the student carrying out a physical activity, rather than listening to a lecture or merely watching a demonstration
  - Also known as "tactile," "hands-on," or "physical" learning
  - Examples:
    - Hands-on simulation
    - Role playing exercises
- Definition of gamification: strategic attempt to enhance systems, services, organizations, and activities by creating similar experiences to those experienced when playing games in order to motivate and engage users

PROS VS CONS OF KINESTHETIC LEARNING

- Benefits of kinesthetic learning
  - Increase information retention
  - Improve muscle memory
  - More engaged participation
  - Improves problem-solving skills
  - Refines risk assessment
  - Improves autonomy and self-confidence
  - Strengthens working relationships
- Cons of kinesthetic learning
  - Time consuming
  - Financial availability
  - Resources (material & staffing)
  - Student incentives/motivation

HOW CAN THIS BE INCORPORATED INTO PA CURRICULUM?

- **Patient Assessment**
- **Anatomy**
- **Clinical Skills**
- **Diagnostic studies**
- Medicine based classes
- Pharmacology
- And many more!



SHU OLYMPICS BASIC INFORMATION

- SHU IRB approval (IRB#230216A - Exempt Status)
- Conducted with the 2nd semester didactic year students
- Completion of Pre-survey
- Introduction
  - Create team names and team captain
  - Teams of 5 students with a total of 8 teams
  - There were 8 stations: 5 minutes each with 2-minute transition time
- Events
  - Scavenger hunts, building a tower with wooden blocks, MCQs, skills, & patient education (OSCE)
- Debrief
  - Reviewed each station and the answers
- Award ceremony
- Completion of Post-survey

SHU OLYMPICS ASSESSING:

PANCE MEDICAL CONTENT CATEGORIES

- **Cardiovascular**
- **Pulmonology**
- **Dermatology**
- **Renal/Nephrology**
- Endocrinology
- **ENT**
- **GI/Nutrition**
- GU
- **Hematologic System**
- **Infectious Diseases**
- MSK
- Neurology
- Psychiatry/Behavioral
- Reproductive

SHU OLYMPICS ASSESSING:

PANCE TASK AREAS

- History Taking and Performing Physical Examination
- Using Diagnostic and Laboratory Studies
- Formulating Most Likely Diagnosis
- Managing Patients
  - Health Maintenance, Patient Education, & Preventative Measures
  - Clinical Intervention
  - Pharmaceutical Therapeutics
- Applying Basic Scientific Concepts

SHU PRE AND POST SURVEY

Recipients can scan the code on a phone or tablet to access the form.

Download

Recipients can scan the code on a phone or tablet to access the form.

Download

SHU PRE AND POST SURVEY DATA RESULTS

- Statistically significance results post survey:
  - I prefer to work in groups rather than solo when learning new materials.
  - Competition drives performance in a curriculum based in the gamified curriculum model.
  - Defining engagement as the level of meaningful involvement in activity, how engaged are you by a curriculum based on traditional didactic lectures?

SHU SURVEY RESULTS

Group Statistics

	Pre_Post	N	Mean	Std. Deviation	Std. Error Mean
I prefer to work in groups rather than solo when learning new materials.	Pre_survey	40	3.08	1.228	.194
	Post_survey	36	3.64	1.018	.170
Defining motivation as your desire or willingness to participate in an activity, how motivated are you to learn by a curriculum based on traditional didactic lectures?	Pre_survey	40	4.03	1.000	.158
	Post_survey	36	4.11	.919	.153
Defining engagement as the level of meaningful involvement in an activity, how engaged are you by a curriculum based on traditional didactic lectures?	Pre_survey	40	3.85	1.001	.158
	Post_survey	36	4.31	.710	.118
Defining challenge as the capacity of an activity to test your abilities, how challenged are you by a curriculum based on traditional didactic lectures?	Pre_survey	40	4.25	.670	.106
	Post_survey	36	4.22	.681	.113
Competition drives performance in a curriculum based on traditional didactic lectures.	Pre_survey	40	3.03	1.387	.219
	Post_survey	36	3.83	1.000	.167
I prefer interactive learning (ex. questions or games) rather than traditional methods (ex. reading text or watching videos or lectures)	Pre_survey	40	4.03	.891	.141
	Post_survey	36	4.06	.893	.149
Currently my stress level is elevated (more than my usual baseline).	Pre_survey	40	4.10	1.057	.167
	Post_survey	36	3.69	.951	.158
I am excited for today's activity.	Pre_survey	40	3.93	.917	.145
	Post_survey	36	4.22	.832	.139

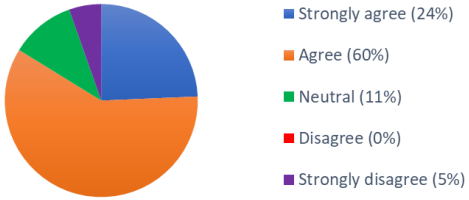
SHU SURVEY RESULTS

Independent Samples Test

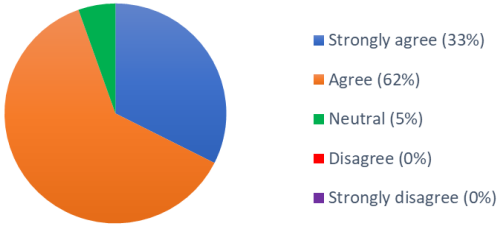
		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
I prefer to work in groups rather than solo when learning new materials.	Equal variances assumed	1.038	.311	-2.165	74	.034	-.564	.260	-1.083	-.045
	Equal variances not assumed			-2.187	73.537	.032	-.564	.258	-1.078	-.050
Defining motivation as your desire or willingness to participate in an activity, how motivated are you to learn by a curriculum based on traditional didactic lectures?	Equal variances assumed	.346	.558	-.389	74	.698	-.086	.221	-.527	.354
	Equal variances not assumed			-.391	73.962	.697	-.086	.220	-.525	.352
Defining engagement as the level of meaningful involvement in an activity, how engaged are you by a curriculum based on traditional didactic lectures?	Equal variances assumed	.677	.413	-2.265	74	.026	-.456	.201	-.856	-.055
	Equal variances not assumed			-2.305	70.296	.024	-.456	.198	-.850	-.061
Defining challenge as the capacity of an activity to test your abilities, how challenged are you by a curriculum based on traditional didactic lectures?	Equal variances assumed	.000	.993	.179	74	.858	.028	.155	-.281	.337
	Equal variances not assumed			.179	72.897	.858	.028	.155	-.282	.337
Competition drives performance in a curriculum based on traditional didactic lectures.	Equal variances assumed	6.020	.016	-2.886	74	.005	-.808	.280	-1.366	-.250
	Equal variances not assumed			-2.935	70.768	.004	-.808	.275	-1.357	-.259
I prefer interactive learning (ex. questions or games) rather than traditional methods (ex. reading text or watching videos or lectures)	Equal variances assumed	.090	.765	-.149	74	.882	-.031	.205	-.439	.378
	Equal variances not assumed			-.149	73.139	.882	-.031	.205	-.439	.378
Currently my stress level is elevated (more than my usual baseline).	Equal variances assumed	.063	.803	1.751	74	.084	.406	.232	-.056	.867
	Equal variances not assumed			1.761	74.000	.082	.406	.230	-.053	.865
I am excited for today's activity.	Equal variances assumed	.153	.696	-1.474	74	.145	-.297	.202	-.699	.105
	Equal variances not assumed			-1.482	73.993	.143	-.297	.201	-.697	.102

SHU PRE AND POST SURVEY DATA RESULTS: POSITIVE RESPONSES

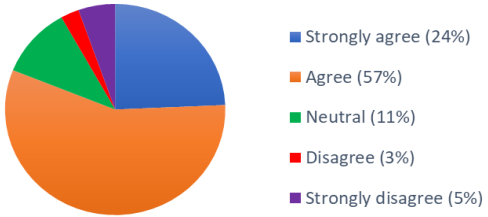
13. This type of gamification should be continued and in the future with more acitivities



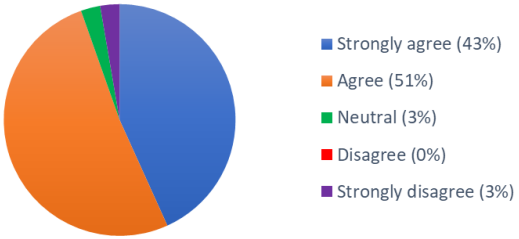
14. The gamified cirriculum covered was fair and covered a wide range of area topics



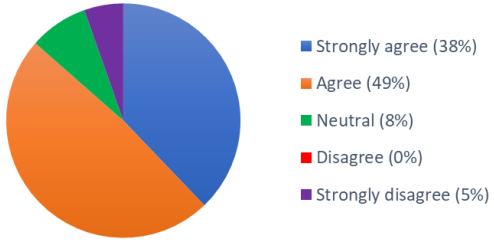
16. This form of gamification was less stressful compared to the traditional didactic learning (ex. exams, multiple-choice questions, or essays)



17. This particular gamification event was well structured, organized, and administered.



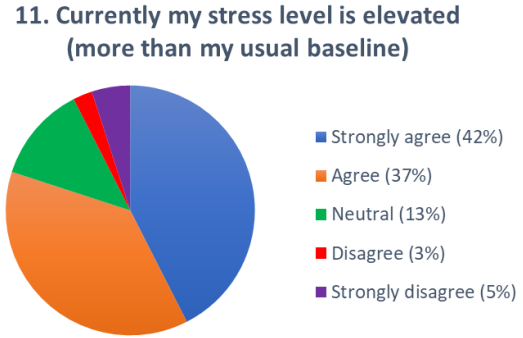
19. I am excited for future activities like today

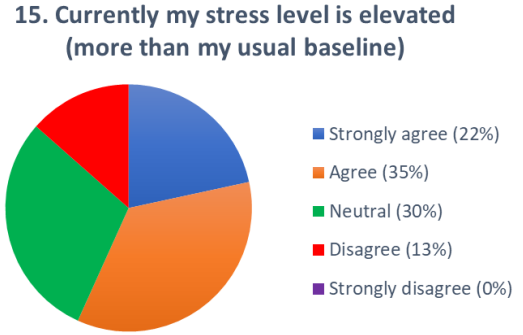


SHU PRE AND POST SURVEY DATA RESULTS

- Currently my stress level is elevated (more than my usual baseline)
  - Not statistically significant but an improvement

Pre-Survey	Post-Survey

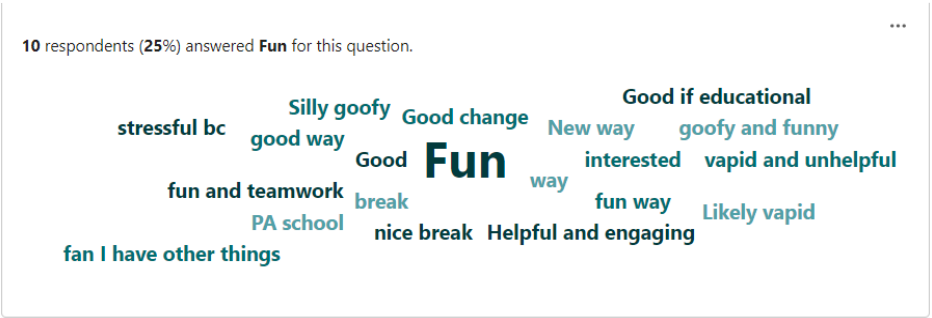




SHU PRE AND POST SURVEY DATA RESULTS

- What is the first words that come to mind when describing your feelings about integrating games into PA education?

Pre-Survey



Post-Survey

SHU PRE AND POST SURVEY DATA RESULTS

- Common themes based on the comments:


SACRED HEART

GAMIFICATION AND PANCE RESULTS

- Currently there is no data regarding gamification curriculum and PANCE results
- Questions from SHU Olympics were based on areas of opportunity of prior cohort (PACKRAT)
  - Future goals is to compare with PACKRAT scores once taken
- This type of gamification has been conducted in EM residency program, *"Gamification of graduate medical education in an emergency medicine residency program*" by Shayne Gue et al.
  - Implemented East EMWars, a yearlong, longitudinal game
  - Participants were given nonparametric testing for quantitative data with paired pre- and post-intervention responses
  - Results: An increase in motivation and engagement but needs further research to determine if there is a correlation in examination scores.

DEMONSTRATION

AAPA GAMIFICATION PRE SURVEY

NOW IT IS YOUR TURN TO TRY IT OUT.

WE NEED 2 TEAMS OF 5

PREFERABLY CLINICAL & DIDACTIC YEAR PA STUDENTS IN EACH GROUP

DEMONSTRATION INSTRUCTIONS

- **2 Teams of 5** with didactic and clinical year students
- There will be **5 rounds, each round varies in time**
- Each team will be competing the round **at the same time** in a variety of different content areas
- Teams captain will write down their answers on the answer sheet
- **Audience members** can also **participate by cheering** on the teams OR **answer the questions themselves** which available by QR code
- The team that earns the most point **WINS!**

ROUND 1

ROUND 2

ROUND 3

ROUND 4

ROUND 5

AAPA POST SURVEY

Thank you for participating!

Please give us 2 minutes to tabulate scores

In the interim, please complete the Post Survey

WINNING TEAM IS:

TAKE AWAYS

- Applying gamification-based education into the PA curriculum is a fun way for students to continue learning outside of the tradition didactic education style.
- Students can utilize their knowledge and skills in a team-based environment driven by competition and accuracy.
- Gamification based learning can be implemented throughout the PA curriculum.
- PA curriculum can be FUN and ENJOYABLE!

ACKNOWLEDGEMENT

Thank you to Dr. Eric Nemec for his continued support and data analysis of this project!

Thank you to the SHU MSPAS Class of 2024 students for their participation and continued dedication to being life-long learners!

REFERENCES

Arin C Whitman, Kim Tanzer, Eric C. Nemec, Gamifying the memorization of brand/generic drug names, *Currents in Pharmacy Teaching and Learning*, 2019. https://doi.org/10.1016/j.cptl.2018.12.014

Busan AM. Learning styles of medical students - implications in education. Curr Health Sci J. 2014 Apr-Jun;40(2):104-10. https://doi: 10.12865/CHSJ.40.02.04. Epub 2014 Mar 29

Carlson, Rachel; Simon, Albert; and McMullen, Bob. *LANGE Q&A Physician Assistant Examination, Seventh Edition*. New York: McGraw-Hill Education, 2015.

Denise L Hope, Gary D Grant, Gary D Rogers, Michelle A King, Gamification in pharmacy education: a systematic quantitative literature review, *International Journal of Pharmacy Practice*, 2022. https://doi.org/10.1093/ijpp/riac099

Gue, S., Ray, J. & Ganti, L. Gamification of graduate medical education in an emergency medicine residency program. *Int J Emerg* Med 15, 41 (2022). https://doi.org/10.1186/s12245-022-00445-1

CONTACT INFORMATION

SANDY NARCISO-OWEN (SHE/HER)
NARCISO-OWENS@SACREDHEART.EDU

VICTORIA HO (SHE/HER)
HOV12@SACREDHEART.EDU