Comprehensive Report of Online Training Programme on "Gamification in Higher Education - Awareness and Ways Forward on 10-11 November 2021 conducted by Commonwealth Educational Media Centre for Asia (CEMCA), New Delhi in collaboration with HELP University, Malaysia.

Gamification in Higher Education Awareness and Ways Forward

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Motivation & Background

Despite the emergence of multiple technologies to support higher education, it is still a challenge to make learning interactive and interesting, specifically in the current scenario of blended education. Teachers are facing tremendous pressure to adapt to new ways of teaching and learning amidst the deteriorating attention levels of students. Games facilitate an interactive and engaging experience for the learners. Specifically, gamification focuses on the idea of gamifying existing teaching approaches to make learning interesting with in-class activities and promoting interaction among students. This is particularly relevant in the current context where there is a need to promote engaging learning experiences through online and blended delivery systems.

Games and gamification have been leveraged to teach concepts across a range of disciplines and topics such as Pandemics (SurviveCovid-19, SurviveCovid-19++), Healthcare (MobileQuiz, Diabetic Mario) to computing skills such as Java programming (Greenfoot), algorithmic thinking (Scratch, Alice 3D), and debugging (RoboBug, Gidget, G4D). While there is immense scope to improve teaching and learning through gamification, there is a distinct lack of awareness in the teacher community, and specifically tools that could facilitate interactive teaching and learning.

With this background and the emerging need to raise awareness on gamification to improve teaching and learning, CEMCA in collaboration with HELP University, Malaysia has organized this 2-day workshop.

Resource Person: Dr. Sridhar Chimalakonda, Assistant Professor, Department of Science & Engineering, Indian Institute of Technology Tirupati, and Lead, *Research in Intelligent Software & Human Analytics (RISHA) Lab*. Dr. Sridhar was supported by his PhD student Akhila Sri Manasa during interactive activities.

Objectives
The workshop objectives are:
- Create awareness on the potential of gamification and games for active online learning and teaching.
- Provide examples of gamification for online teaching and learning from various domains
- Gamification activities for teachers

Outcomes

Participants were trained on the need for gamification in teaching, and different aspects of gamification such as selecting ideas for gamification, design of gamification challenges, motivators, game elements. In addition, participants were trained to use tools like GimKit and ClassCraft to add gamification into their courses.

Methodology

The workshop was conducted through presentations and demonstrations by the expert and his team along with gamification activities for participants. At the end of the workshop, a quiz and post-workshop activities were conducted through the LMS platform of HELP university.

Programme Details (Date and Duration) and Schedule

The workshop was held on 10-11 November 2021 with 2.5 hours of live sessions each day. The live sessions were conducted from 11.30 am to 2 pm IST which is 2.00 pm to 4.30 pm Malaysia Time using videoconferencing technology. The session was interactive with many questions and comments from the participants. In addition to the synchronous online sessions, there were hands-on assignments and interaction through asynchronous mode through the HELP university's LMS.

Workshop Outline:
- Concept and Overview of Gamification
- Demo of Gamification
- Hands-on assignments to explore and practice Gamification
- Experience sharing by teachers who have incorporated Gamification
- Interactive session for doubt clarification and sharing observations

| Day 1: 10 November 2021		
Time	**Activity**	**Session details**
11.30am-11.45 am IST 2pm-2.15pm MYT	Inaugural session	Welcome address by Prof. Madhu, Director of CEMCA Welcome Speech by Prof. Paul Chan, VC, HELP University

Time	Activity	Session Details
11.45-12.45 pm IST 2.15pm-3.15pm MYT	Presentation on "Gamification in Higher Education - Awareness and Ways Forward" (Part 1)	Motivation, Background and Overview of Gamification Concepts of Gamification Examples of Gamification
12.45pm-1.15pm IST 3.45pm-4.30pm MYT	Demonstration of Gamification	*GimKit* *ClassCraft*
1.15pm-2.00pm IST 3.45pm-4.30pm MY	Activity 1: How to identify gamification topic and game elements for your courses?	Activity and interaction with participants to facilitate selection of topic and aspects for gamification (i) Identify gamification topic (ii) Write list of topics in your current course (iii) What are the learning goals? (iv) What are the challenges you think gamification might help? (v) Identify game elements Link for the [worksheet]().

Day 2: 11 November 2021

Time	Activity	Session Details
11.30am-12.30pm IST 2pm-3pm MYT	Presentation on "Gamification in Higher Education - Awareness and Ways Forward" (Part 2)	Gamification Design Process Tools and frameworks for gamification Game-based learning, Examples of Games Challenges and ways forward
12.30pm-1.00pm IST 3pm-3.30pm MYT	Demonstration of Gamification	
1pm-1.40pm IST 3.30pm-4.10pm MYT	Activity 2: Brainstorming and implementation of gamification activities for a topic.	The participants have engaged in activities and the resource person and team has interacted with them through a walk-through session of gamification using ClassCraft
1.40pm-2.00pm IST 4.10pm-4.30pm MYT	Concluding session	Takeaways and summary by the instructor Concluding remarks by Prof. Andy Liew, Deputy VC, HELP University Comments from participants

Post-Workshop Activities and Resources on LMS

- A short quiz consisting of 10 questions posted on the LMS of HELP University
- Post-workshop activity of gamifying a course using ClassCraft as a take-home task
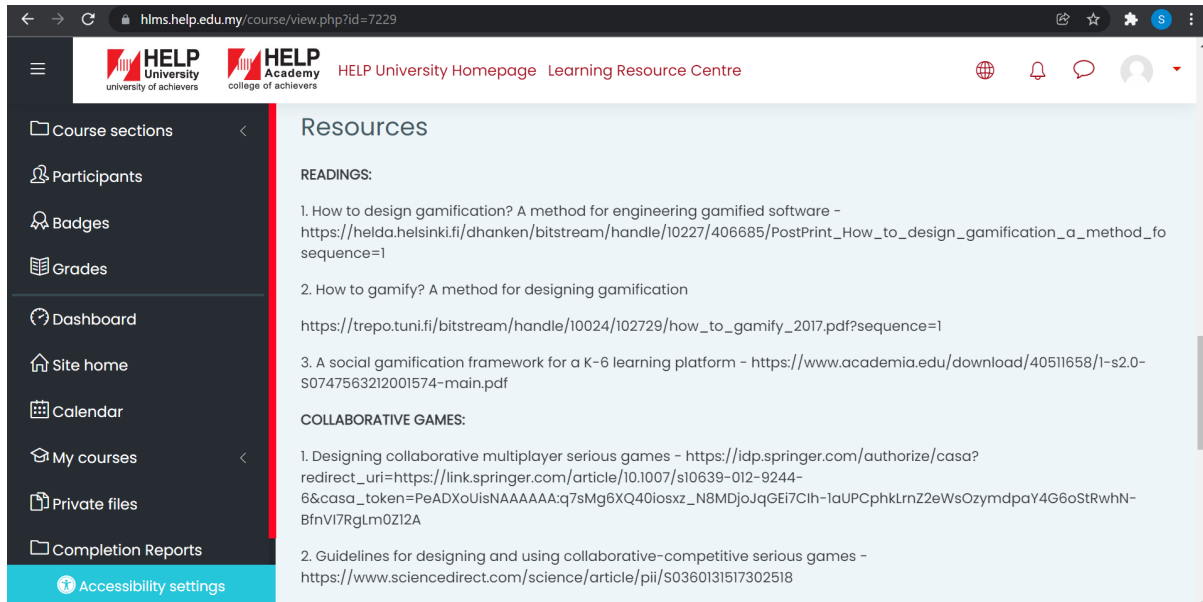

Participants

The webinar was attended by 28 participants (mostly Senior Lecturers and Professors who are teaching courses in multiple disciplines such as Psychology, Business Studies, Language Studies at HELP University). The list of participants is included in Appendix 1.

Day 1

Inaugural session

Professor Paul Chan, Vice Chancellor HELP University, spoke of the importance of gamification to support experiential learning. Professor Madhu Parhar, Director CEMCA, appreciated the initiative by the University to encourage innovation in teaching and learning.

Dr. Shiffon Chatterjee, Senior Program Officer (Online & Blended Learning), CEMCA has been instrumental in organizing, coordinating and supporting the entire programme with Prof. Loh Kok Cheang being the nodal point of contact from HELP University. The workshop was encouraged by Mr. Sushil Kumar Tanwar, Head of Administration and Finance, CEMCA.
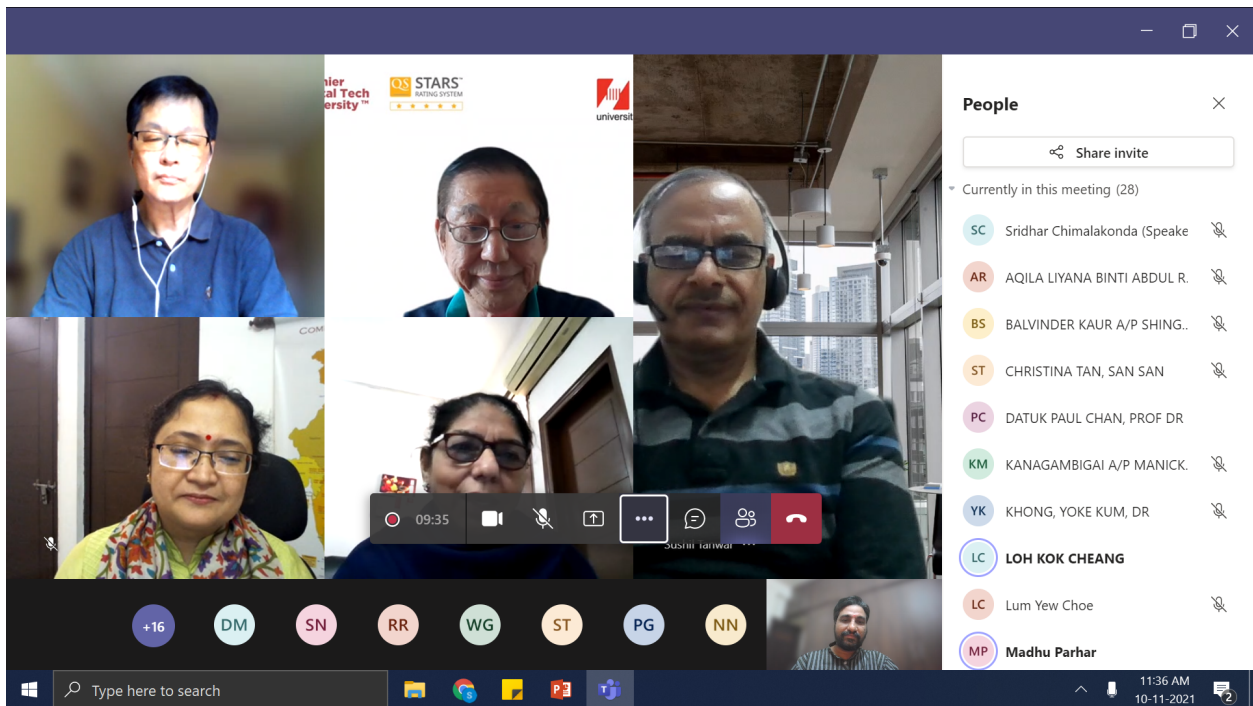
The Lecture Session

The session by Dr. Sridhar Chimalakonda started off with the below goals for the workshop:

- Awareness on Gamification
- Gamification Examples
- Gamification Design Process
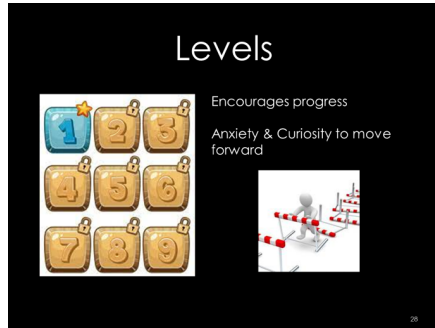- Demonstrations, Interaction and Activities

This was followed by highlighting the pros and cons of online teaching and learning, and setting the base for the rest of the workshop by motivating the need for gamification through the Indian version of Snakes and Ladders, which includes multiple aspects of gamification.
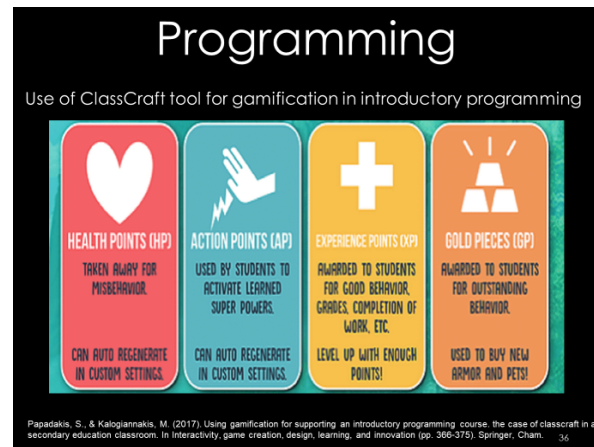
Snakes and Ladders

How about this?
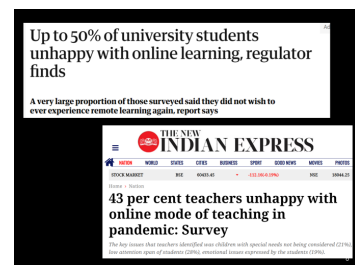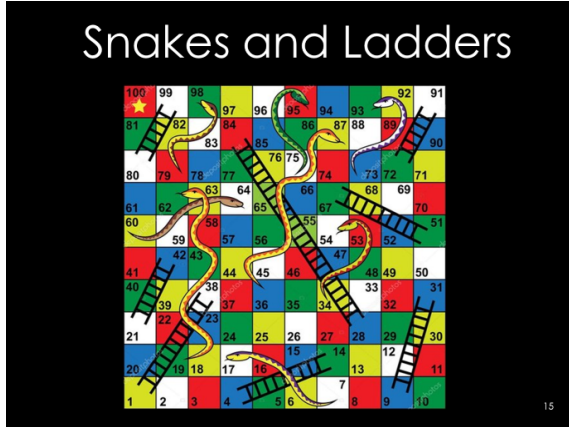
The speaker introduced the core concepts of Gamification (such as LeaderBoard, UserTypes, Rewards, Motivation, Levels...) and how each one of

Levels

Encourages progress

Anxiety & Curiosity to move forward

Rewards

Badges   Trophies

Participate, Practice and Progress

them can be used to facilitate better learning and also clarified the difference between gamification, games, serious and professional games.

In the next part of the talk, several Gamification examples from multiple domains such as Healthcare, Chemistry, Language Learning, Programming were elaborated.

Gamification in Health

Monitor Blood Glucose levels in diabetic patients

Cafazzo, J. A., Casselman, M., Hamming, N., Katzman, D. K., & Palmert, M. R. (2012). Design of an mHealth app for the self-management of adolescent type 1 diabetes: a pilot study. Journal of medical Internet research, 14(3), e70.

Programming

Use of ClassCraft tool for gamification in introductory programming

HEALTH POINTS (HP)
TAKEN AWAY FOR MISBEHAVIOR.
CAN AUTO REGENERATE IN CUSTOM SETTINGS.

ACTION POINTS (AP)
USED BY STUDENTS TO ACTIVATE LEARNED SUPER POWERS.
CAN AUTO REGENERATE IN CUSTOM SETTINGS.

EXPERIENCE POINTS (XP)
AWARDED TO STUDENTS FOR GOOD BEHAVIOR, GRADES, COMPLETION OF WORK, ETC.
LEVEL UP WITH ENOUGH POINTS!

GOLD PIECES (GP)
AWARDED TO STUDENTS FOR OUTSTANDING BEHAVIOR.
USED TO BUY NEW ARMOR AND PETS!

Papadakis, S., & Kalogiannakis, M. (2017). Using gamification for supporting an introductory programming course. the case of classcraft in a secondary education classroom. In Interactivity, game creation, design, learning, and innovation (pp. 366-375). Springer, Cham.

This was followed by demonstration of GimKit and ClassCraft tools. Most importantly the audience were involved in the gamification activities to provide a feel for the activity. The day ended with activity by the participants on identifying game elements for their respective courses, and interaction and feedback from the instructor and the team.

Day 2

The next day's session started with a quick recap of Day 1 followed by flipping the perspective of gamification from the teacher's perspective, and motivating the need for teachers to incorporate gamification in their teaching.
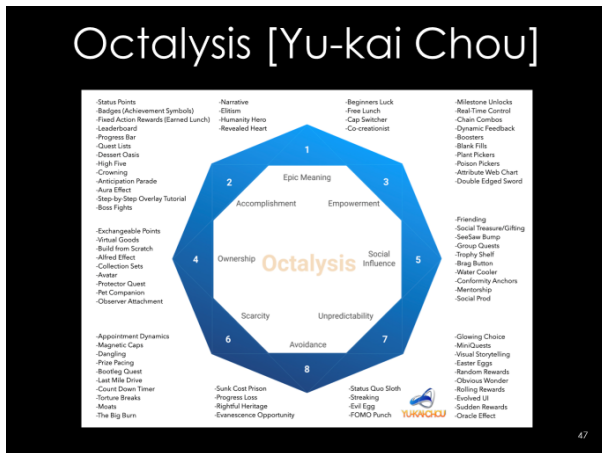
Dr. Sridhar explained the fundamental principles (human-focused design vs function-focused design) and different types of gamification (structural vs content) followed by a detailed session on the gamification design process including Octalysis, gamification taxonomy among others.
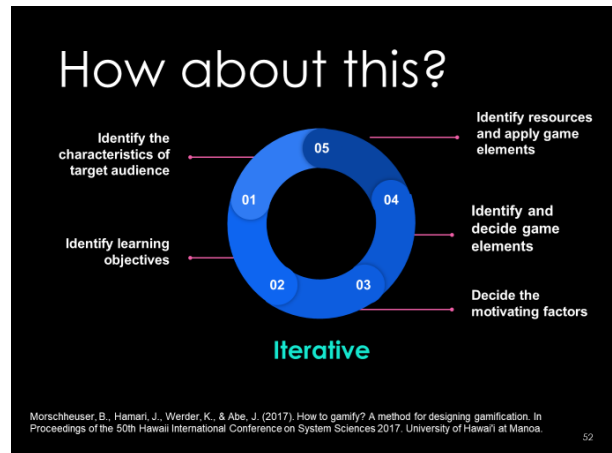
He further presented a simplified game design process from a practical perspective that teachers can potentially use with minimal effort. The talk session then focused on tools that can be used by teachers for gamification and the importance of learning theories in gamification, and finally with caveats on use for gamification.

The next part of the session focused on demonstrating examples of game elements followed by Activity 2 (Brainstorming and implementation of gamification activities for the chosen topics using ClassCraft) and interaction with participants.
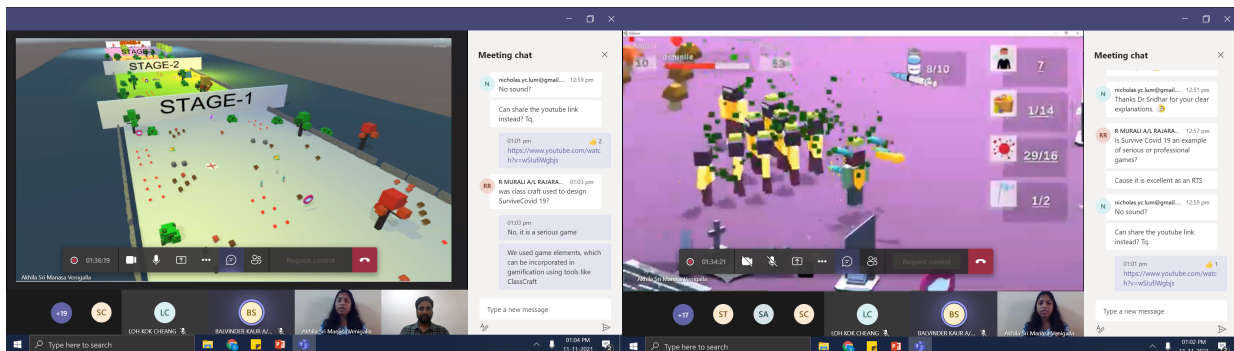
Finally, Dr. Sridhar summarized the key take-aways of the workshop and next steps.

The closing session was graced by Prof. Andy Liew, Deputy VC, HELP University who appreciated the workshop, and mentioned the need for collaboration between CEMCA, HELP and IIT-T on gamification towards a center for gamification and games. Several participants have asked for the next version of the workshop. The feedback from some of the participants on the workshop is attached in Appendix 2.
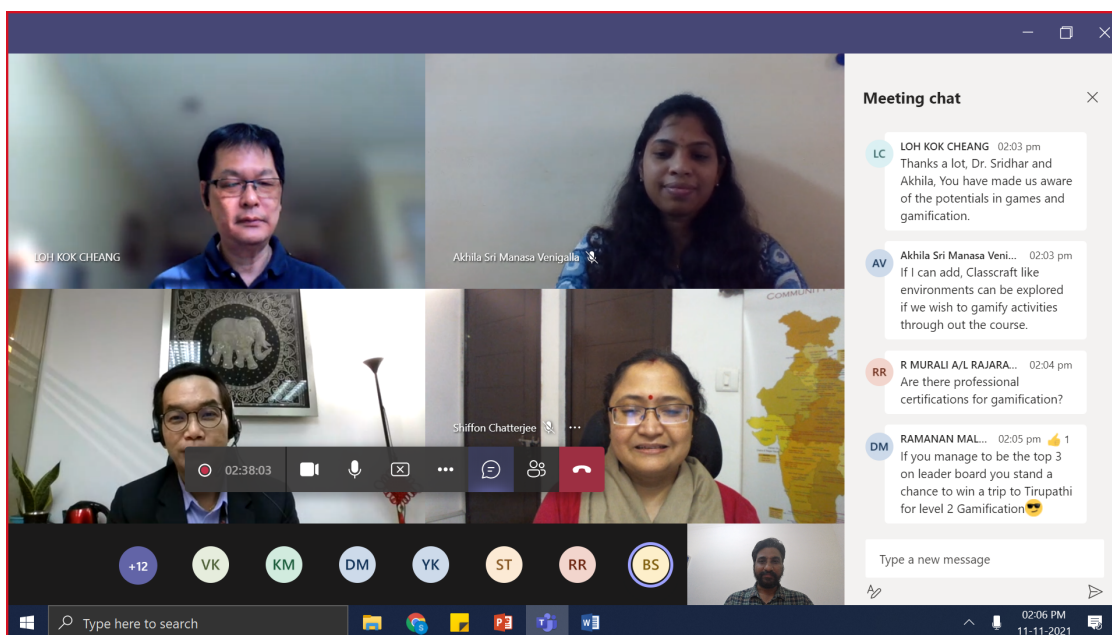
Next steps

It was clear from the interactions during the workshop as well as from the feedback that Gamification is a well perceived topic that has a great deal of interest, more so in the context of online teaching and learning. We will be happy to conduct further sessions and do collaborative work on this topic with CEMCA as well as HELP University.

Acknowledgements

We would like to thank Prof. Madhu Parhar, Director of CEMCA for her presence and interesting comments during the workshop. Special thanks to Prof. Paul Chan, VC of HELP University for his encouraging comments on further collaboration with IIT-T through CEMCA on gamification. Also, Prof. And Liew's presence at the end rejuvenated the need for innovative ways such as gamification in higher education. He also emphasized the need for further collaboration. Dr. Shiffon Chatterjee, Senior Program Officer (Online & Blended Learning) from CEMCA and Dr. Loh Kok Cheang from HELP were instrumental in organizing the webinar, and their continuous support from the inception of the idea to its execution is commendable. Mr. Sushil Kumar Tanwar, Head of Administration and Finance, CEMCA has encouraged with all required support. Most importantly, we would like to thank all the participants who made the workshop quite interactive with their questions and comments. Special thanks to Akhila Sri Manasa for her continuous support throughout.

Appendix 1 - List of participants

No.	Name	Gender	Designation	Department
1	Anne Noor Jamaludin, Dr.	F	Lecturer	Psychology
2	Aqila Liyana Abdul Rauf	F	Lecturer	Education
3	Aw Seng Hong	M	Senior Lecturer	A-Levels
4	Balvinder Kaur Shingar Singh	F	Lecturer	Education
5	Cheah Sin Chye, Dr.	M	Head of Department	Business Studies
6	Fong Pui Kwan, Dr.	F	Senior Lecturer	ICT
7	Hew Nam Fong, Dr.	M	Senior Lecturer	American & Canadian Educ

8	Kanagambigai Manickavasagar	F	Senior Lecturer	A-Levels
9	Khairuazhar Sahabudin	M	Lecturer	Communication
10	Khong Yoke Kum, Dr.	F	Senior Lecturer	A-Levels
11	Lee Wei Jian	M	Coordinator	Education & Languages
12	Liew Huey Min, Dr.	F	Senior Lecturer/Dep HoD	Business Studies
13	Malini Ramanan, Dr.	F	Senior Lecturer	Crime & Criminolgy
14	Mohan Raj Gurubatham, Dr.	M	Professor	Graduate School
15	Naline Shanmugan	F	Senior Lecturer	ICT
16	Nor Azalina Rajab	F	Asst lab Supervisor	A-Levels
17	Ooi Kok Kee, Dr.	M	Senior Lecturer	Business Studies
18	Priyadharsini Muthukrishnan, Dr.	F	Senior Lecturer	Education
19	R. Murali Rajaretnam	M	Senior Lecturer	Foundation Studies
20	Rosalind Ahju	F	Lecturer	Education
21	Simon Lim	M	Senior Lecturer	Business Studies
22	Sylvia Ng Poh Yoke, Dr.	F	Lecturer	Education
23	Synede Lim	F	Counselor/Senior Lecturer	CareerSense
24	Tan Cher Yi	F	Senior Tutor	Psychology
25	Victor Goh, Dr.	M	Senior Lecturer	Psychology
26	Vikneswari Kanashagaran	F	Lecturer	Management Studies
27	Wong Shing Pyng, Dr.	F	Lecturer	Languages
28	Yan Huey Jiuan, Dr.	F	Senior Lecturer/Manager	Graduate School

Appendix 2 (Feedback from Participants collected by HELP University)

COURSE CONTENT		AVG
1	THE COURSE MET THE STATED OBJECTIVES.	3.8
2	THE COURSE HAS SIGNIFICANTLY INCREASED MY KNOWLEDGE AND UNDERSTANDING OF CONTENT, CONCEPTS AND PRINCIPLES.	3.8
3	THE SUBJECT MATTER WAS WELL COVERED AND DISCUSSIONS WERE ADEQUATE.	3.73
4	THE EXAMPLES PRESENTED WERE USEFUL AND HAVE HELPED TO ENHANCE MY UNDERSTANDING ON THE SUBJECT MATTER.	3.73
5	THE COURSE IS RELEVANT TO MY WORK AND WILL ENHANCE MY PERFORMANCE.	3.6
6	THE COURSE MATERIALS/MANUALS (INCLUDING JOB-AIDS, TEMPLATES, GLOSSARY OF TERMS, ETC.) WERE RELEVANT AND CONTRIBUTED TO THE ACHIEVEMENT OF LEARNING OBJECTIVES.	3.60

COURSE TRAINER		AVG
7	THE TRAINER(S) DID A GOOD JOB OF STATING THE OBJECTIVES AT THE BEGINNING OF THE TRAINING.	4.00
8	THE TRAINER(S) MADE GOOD USE OF VISUAL AIDS (E.G. FLIP CHART, WHITE BOARDS, SLIDES).	3.93
9	THE TRAINER(S) WAS GOOD AT KEEPING EVERYONE INTERESTED IN THE TOPIC.	3.8
10	THE TRAINER(S) ENCOURAGES QUESTIONS AND PARTICIPATION FROM THE TRAINEES.	4
11	THE TRAINER(S) MADE SURE THAT EVERYONE UNDERSTOOD THE CONCEPTS BEFORE MOVING ON TO THE NEXT TOPIC.	4
12	THE TRAINER(S) SUMMARIZED IMPORTANT CONCEPTS BEFORE MOVING ON TO THE NEXT TOPIC.	3.93

13. OVERALL, HOW WOULD YOU RATE THIS TRAINING?	EXCELLENT - 3

	GOOD - 9
	FAIR - 2
	POOR - 1

WHAT WAS THE BEST ASPECT OF THE WORKSHOP?	
1	The examples that was provided.
2	Introduction to Classcraft.
3	The gamification demo.
4	Application of gamification.
5	The presentation slides are clear and helpful.
6	Giving me ideas on how to incorporate games into teaching.
7	Getting to know about various gamification tools such as Gimkit, Classcraft, etc.
8	Introduction to new learning tools online.
9	Simple to understand but need time to explore.
10	Getting involvement of participants.
11	The trainer encourages questions and participation from the trainees.
12	It encourage participation and completing a task in a more fun.
13	The score obtained by the participant.

WHAT ASPECT OF THE WORKSHOP NEEDS IMPROVEMENT?	
1	Sharing of presenter's past works/projects that are related to the content of the workshop.
2	Trainer should speak at a slower rate and ensure that participants are able to follow.
3	I am wondering if this gamification for undergraduates is suitable?

4	**Please provide more hands-on work and some videos to watch to learn the skills.**
5	**There were participants that were stuck during some parts of the activity. It would have been good if the organizers or the trainer took control and tried to troubleshoot from their end. That would have made it a more interactive session, of course, that will have its own set of problems, too.**
6	**Slides presentation.**
7	**Maybe spread the course out over a few days with shorter sessions and more hands-on activities.**
8	**Need in-depth information and relevant specific examples.**
9	**More examples and demos.**
10	**The trainer can improve at keeping everyone interested in the topic.**

	ADDITIONAL COMMENTS OR SUGGESTIONS:
1	**Prefer to have such workshops F2F, as they would be more impactful. But, thanks all the same, for arranging this online session, given the situation we are in at present.**
2	**Although it was to be gamification but the talk almost wholly more on games for pre-school and secondary students, not much for tertiary education.**