

REFLECTIONS ON PRACTICE

**A Reflection on the Game-based Approach to Collaborative Learning:
A Case of an International eTournament on Sustainable Development Goals**

Martin LAU, Lisa LAW, King CHONG, and Theresa KWONG

Centre for Holistic Teaching and Learning, Hong Kong Baptist University (HKBU)

Correspondence:

Name: Dr Theresa KWONG

Address: Centre for Holistic Teaching and Learning, Room AAB803, Level 8, Academic and Administration Building, Hong Kong Baptist University, 15 Baptist University Road, Kowloon Tong, Kowloon, Hong Kong SAR

Email: theresa@hkbu.edu.hk

Recommended Citation:

Lau, M., Law, L., Chong, K., & Kwong, T. (2023). A reflection on the game-based approach to collaborative learning: A case of an international e-tournament on sustainable development goals (Special Issue). *Asian Journal of the Scholarship of Teaching and Learning*, 13(1). 160-169.

<https://doi.org/10.24112/ajsotl.133180>

ABSTRACT

To equip students with the knowledge of current global issues and the skills to engage in teamwork with people of diverse backgrounds in virtual settings, an international eTournament on Sustainable Development Goals has been organised since 2019. In this Reflection, the approaches adopted over three runs of the eTournament will be discussed in terms of the adjustments made in response to the authors' self-reflections and students' feedback. Such approaches and reflections show that thoughtful design and selection of technologies are essential for game-based activities to effectively enhance learning.

Keywords: Game-based learning, multi-cultural, multi-disciplinary, online team, sustainability development goals

INTRODUCTION

With the ongoing challenges of global issues that cannot be resolved with a single set of knowledge and skills but with teams of diversified disciplines, higher education institutions can make good use of virtual settings to provide students with opportunities in practicing teamwork skills, while raising their awareness of such issues and equipping themselves with future readiness in this competitive era.

The United Nations SDGs¹ International eTournament is thus organised for students at higher education institutions. The term “eTournament” implies the online nature of the activity, and the global nature of the SDGs makes it the theme of the activity. There are three objectives for the eTournament:

1. To raise students’ awareness of the SDGs through a game-based approach.
2. To provide students with opportunities in collaborative learning, particularly in virtual settings.
3. To enhance students’ intercultural competence, on understanding others’ cultures and backgrounds.

APPROACH

In order to fulfil the objectives, the core part of the eTournament was an online competition on SDGs knowledge that was conducted on a game-based learning platform. Game-based learning is “a type of game play with defined learning outcomes” (Plass et al., 2016, p. 259) and its benefits include enhancement of strategic thinking, problem-solving and skills-building (Al-Azawi et al., 2016). Adopting digital games not only motivates students to learn in an enjoyable and engaging environment, but also provides them with the opportunity to learn to work collaboratively in teams. In addition, the use of learning management systems (LMS) and instant messaging platforms allow virtual team members from different parts of the world to carry out their discussions on given tasks (Law et al., 2020).

Before the commencement of an eTournament, teams of four or five participating students are formed by the organiser rather than the students themselves. As the participating students are recruited openly worldwide, such a team formation mechanism drives the students to communicate and collaborate via virtual means and ensures diverse member backgrounds within the groups, facilitating the enhancement of intercultural competence. Also, to facilitate collaborative learning and development of intercultural competence, self-learning materials on teamwork, conflict management and cultural differences were provided, in addition to the guide on competing on the eTournament game platform.

The eTournament is a two-stage “strategise-compete” process, as outlined in Figure 1.

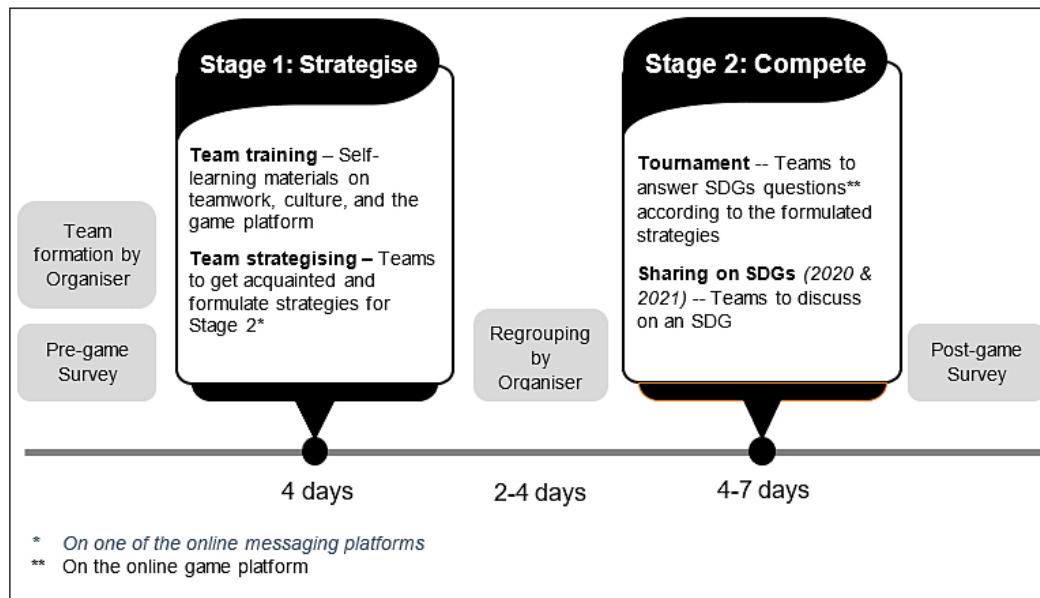


Figure 1. The two stages of the eTournament.

After Stage 1, students who have been active in the discussions can proceed to Stage 2 whereas the inactive ones would be disqualified and removed from the teams. The organiser would then regroup the smaller teams into new four- or five-member teams for a fairer gameplay in Stage 2.

Three runs of similar eTournament were organised in 2019, 2020, and 2021 respectively. For the 2019 and 2020 runs, they were part of the CCGame Project (Lau et al., 2021).

REFLECTIONS AND ADJUSTMENTS TO THE APPROACHES

Table 1 compares the eTournament approaches taken over the three runs. For the second (2020) and third runs (2021), adjustments were made according to self-reflection and students' feedback received in the previous run. Such adjustments and their relation to the overall students' outcome and impressions will be discussed below.

Table 1
Implementation approaches of the three runs of the SDGs eTournament

	2019	2020	2021
SDGs Coverage	9 SDGs		Full 17 SDGs
No. of SDGs Questions and Grouping	About 1,100; in a single question pool		About 1,400; in separate question sets
Game Platform	PaGamO		Tailor-made app
Main Messaging Platform	Moodle	Skype, WeChat or WhatsApp	Line, Skype, WeChat, WhatsApp or Zoom
Team Formation	Students were placed into teams of four to five students by the organiser, with no more than two students from the same region or institution. In almost all cases, the team members did not know each other.		
eTournament Stages	Stage 1: teams to get acquainted with the teammates, and formulate the Stage 2 strategies. Stage 2: Teams to answer SDGs questions and implement the agreed strategies on the game platform.	In addition to the tasks specified in 2019, each team to perform a synchronous online meeting (at least 40 minutes) to share their experience and knowledge on an SDG assigned by the organiser.	
Evaluation Method	<ul style="list-style-type: none"> • Pre- and post-surveys • Analytics from the game platform • Team chat histories • Interviews with students 	<ul style="list-style-type: none"> • Pre- and post-surveys • Analytics from the game platform • Team chat histories 	
No. of Participant Students (at the beginning of Stage 1)	243 students from 24 home regions	416 students from 42 home regions	1,088 students from 41 home regions

SDGs COVERAGE AND GROUPING

In the first run (2019) of the eTournament, only questions related to nine of the 17 SDGs were available as the questions were developed in phases. Since the second run (2020), the full set of questions have been used.

Also, all the questions were initially in a single question pool. After the first run, the organiser self-reflects that separating the questions into different SDGs could facilitate better strategy formulation as the teams could divide labour such that individual team members could focus on particular SDGs. Such grouping has been in place since 2020.

It appears that the coverage and grouping of SDGs questions was relevant to participating students' SDGs awareness after the event. From the post-survey question asking participants to self-evaluate their change in SDGs awareness after the event, the results (Figure 2) show that the percentage of positive responses in 2019 was slightly lower.

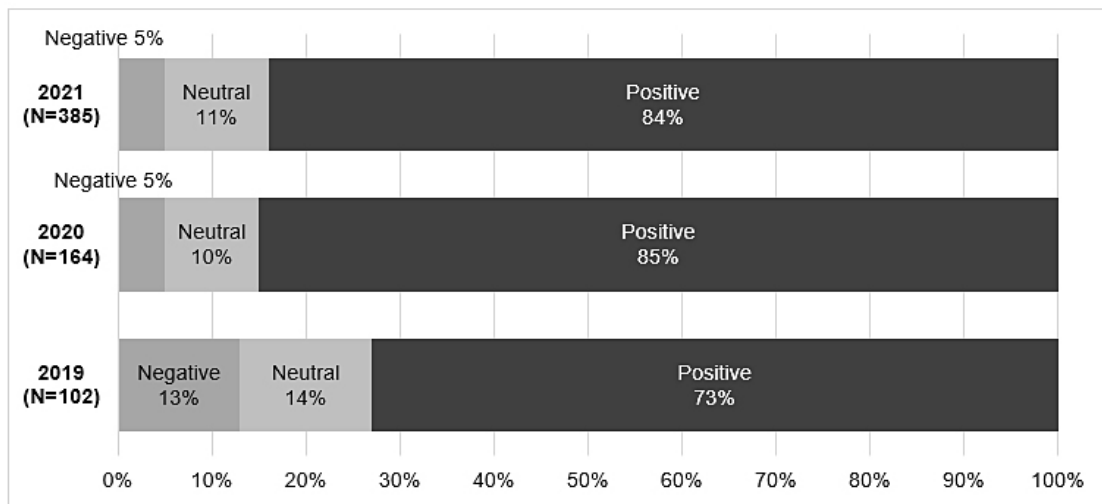


Figure 2. Comparisons of student feedback on the statement in the Post-Game Survey “I become more aware of the United Nations SDGs because of this eTournament” in each of the eTournament runs. “Positive” indicates the combined feedback of “Strongly Agree” and “Agree” whereas “Negative” combines “Strongly Disagree” and “Disagree”.

GAME PLATFORM

For the first two runs of the eTournament, the game-based learning platform [PaGamO](#) was adopted. While PaGamO is a mature platform for participants to learn through virtual competitions on answering SDGs-related questions, and on acquiring, upgrading and capturing virtual lands, it lacks team-based functionalities as pointed out by Law et al. (2020), and mentioned by some students in the post-game survey:

“I think the [PaGamO] game can be better if the players in the same team are allocated to areas that are near to each other.” (Student feedback, 2020)

To address this issue, a tailor-made mobile application (app) was developed and used during the 2021 run. In that app, members could work on any tiles occupied by their team for upgrades and acquisitions, facilitating teamwork.

However, during the 2021 run, some students made use of the loopholes in the app to cheat. Also, the platform could not handle the larger than expected number of participants; the game therefore, particularly at the end of Stage 2, became very slow or even unresponsive. These issues were reflected in the students' comments in the post-game survey:

“The cheaters managed to hack the application...I felt disheartened to continue with the tournament, so did my teammates.” (Student feedback, 2021)

“I wasn't able to enter the game after logging in. It froze no matter what I click.” (Student feedback, 2021)

Such comments clearly indicated that more comprehensive app testing should be done.

MESSAGING PLATFORM

Moodle, an LMS, was chosen as the sole messaging platform during the first run of the eTournament as it is readily available at the organiser’s institution. It is a single platform for easy management and extraction of participants’ chat histories for scoring and analysis of their collaborations. However, the messages on Moodle cannot reach recipients instantly, as reflected by students’ feedback:

“It can be a little hard to communicate with my teammates through the [Moodle] forum posts and chats.”
(Student feedback, 2019)

Therefore, Moodle has been used only for the initial communication since 2020. Once the teams decided their preferred instant messaging platform, the discussions continued from there.

It appears that the choices of the game and messaging platforms relate to the overall eTournament experience. Figure 3 shows the overall impression of the three eTournament runs. With only Moodle adopted as the communication platform in 2019, and the tailor-made app adopted in 2020, the overall experience of the eTournament seemed to be negatively affected.

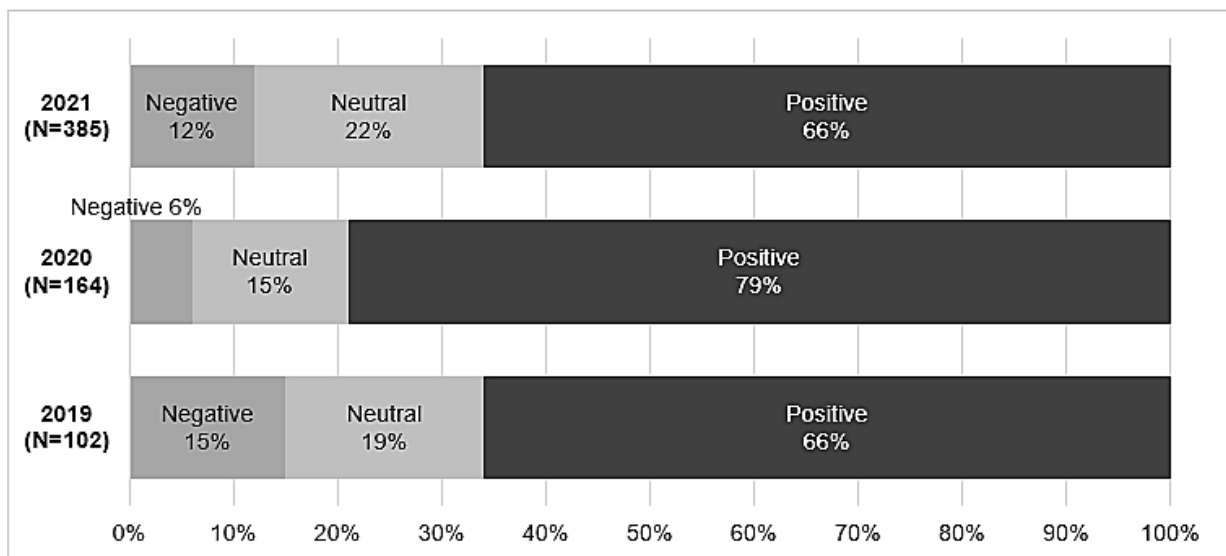


Figure 3. Comparisons of student feedback on the statement in the Post-Game Survey “In general, I enjoyed playing this eTournament” in each of the eTournament runs. “Positive” indicates the combined feedback of “Strongly Agree” and “Agree” whereas “Negative” combines “Strongly Disagree” and “Disagree”.

While it is not intended, the choice of instant messaging platforms seems to be affected by culture. With students coming from different regions, it was sometimes difficult for a team to agree on a common platform. Therefore, during the 2021 run, other messaging platforms such as Line and Zoom were added. In particular, Zoom was added due to its familiarity to students due to frequent use of this platform during the COVID-19 pandemic.

TEAM FORMATION

While students' feedback was generally positive in the team formation mechanism, some students expressed their concerns due to regrouping (for Stage 2) and inactiveness of teammates:

"We spent more than a week to regroup and looking for our teammates. It costs us so much time before we started to discuss SDGs." (Student feedback, 2021)

"My groupmates were only active on the first three days into the game....It's just sad because I literally gave up sleeping at night for about a week to [try to] win this..." (Student feedback, 2021)

In the future eTournaments, further mechanisms to better ensure the activeness of students are needed. Inviting all the enrolled students to an online briefing before Stage 1 (and cancelling the enrollment of those who did not attend without proper reasons) can be an effective measure.

eTOURNAMENT STAGES

Since 2020, a synchronous online SDG discussion has been added in Stage 2. An SDG was assigned to every Stage 2 team by the organiser, with basic data about that SDG and guided questions provided to help teams get started, such as:

- **[SDG 9: Industry Innovation and Infrastructure]** Give a brief description of the industry, innovation and infrastructure of your place of residence, and express whether you are satisfied with the current state of development. Extend the discussion to cover the country of your residence, and state whether you are satisfied with the current state of development from your country's perspective.
- **[SDG 13: Climate Action]** SDG 13 almost interconnects with every other SDGs. Each team member please state TWO examples showing climate change relates to another SDG. Ensure to work as a team so that there is no duplicated/similar examples.

Such additions have been welcomed by the students in terms of enhancing SDGs awareness and teamwork:

"I personally found the 40-minute discussion to be a lot more informative and effective in pushing participants to engage with the SDG intellectually and encouraged critical thinking about the SDG. It also promoted further bonding within the team." (Student feedback, 2021)

"I think there should be more challenges that involve talking with the groupmates! The call with my team has become a highlight of my 2020!!" (Student feedback, 2020)

CONCLUSION

The approaches (and their changes) taken over the three implementations of the eTournament have shown that thoughtful design and selection of technologies are essential for effective game-based activities to enhance students' collaborative learning capacities. The design of such activities should be closely linked with the learning objectives, with proper communication between students (and instructors, if appropriate) for improvements and adjustments; the selection of technologies should facilitate students to complete the activities with proper rationale behind them.

Also, from the transformation of knowledge observed by the participating students, opportunities have been opened up for further activities to facilitate the transformation of SDGs knowledge to student-centred initiatives for sustainability.

ACKNOWLEDGEMENTS

The authors would like to thank the following organisations for funding the eTournament:

- University Grants Committee and Hong Kong Baptist University (2019 and 2020)
- Tin Ka Ping Foundation and United Board for Christian Higher Education in Asia (2021)

ENDNOTE

1. SDGs refer to the 17 Sustainable Development Goals (SDGs) set by the United Nations. For more details, refer to the SDG website: <https://sustainabledevelopment.un.org/sdgs>.

ABOUT THE CORRESPONDING AUTHOR

Dr Theresa KWONG, Senior Fellow of the Higher Education Academy, is the Director of Centre for Holistic Teaching and Learning, Hong Kong Baptist University (HKBU). Theresa's major responsibilities at the Centre include: leading the promotion of a quality culture and scholarship of teaching and learning within the University and beyond; strategically promoting the development of educational technology and innovative pedagogies. Theresa's research interests include blended learning, academic integrity, faculty professional development, outcomes assessment, students' awareness of Sustainable Development Goals, etc.

Theresa can be reached at theresa@hkbu.edu.hk.

REFERENCES

- Annan-Diab, F., & Molinari, C. (2017). Interdisciplinarity: Practical approach to advancing education for sustainability and for the Sustainable Development Goals. *The International Journal of Management Education*, 15(2), 73-83. <https://doi.org/10.1016/j.ijme.2017.03.006>
- Al-Azawi, R., Al-Faliti, F., & Al-Blushi, M. (2016). Educational gamification vs. game based learning: Comparative study. *International Journal of Innovation, Management and Technology*, 7(4), 132-36. <http://dx.doi.org/10.18178/ijimt.2016.7.4.659>
- Lau, M., Vuthaluru, R., Mui, L., Kerrigan, S., Kwong, T., Law, L., Wong, E. Y. W., & Gibson, D. (2021). “How online teams with diverse backgrounds worked to excel: Findings from an international eTournament”. *Frontiers in Education*. <http://doi.org/10.3389/educ.2021.624438>
- Law, L., Lau, M., Leung, Y. W., Kwong, T., & Wong, E. Y. W. (2020). Gamification for teamwork skills: Can a challenge-based online tournament help students learn new knowledge collaboratively in teams? *Global Research in Higher Education*, 3(2), 63-84. <https://doi.org/10.22158/grhe.v3n2p63>
- Plass, J. L., Homer, B. D., & Kinzer, C. K. (2016) Foundations of game-based learning. *Educational Psychologist*, 50(4), 258-83, <http://doi.org/10.1080/00461520.2015.1122533>
- United Nations General Assembly (2015). *Transforming our world: the 2030 agenda for sustainable development*, 21 October 2015 (Vol. 16301). <https://sdgs.un.org/2030agenda> ■