

APPLICATION AND FEASIBILITY OF VARIOUS TEACHING TOOLS USED IN ONLINE CLASSES DURING COVID-19 IN TERTIARY EDUCATION

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The study compares the effectiveness, popularity, and ease of applicability of different learning tools in virtual classrooms among university teachers and students concerning the users' technological literacy and training, as well as equipment support offered by the universities during the pandemic. Comparisons between face-to-face teaching in classrooms and online virtual classrooms will be drawn concerning limitations, incentives, motivation, and effectiveness toward learning. This study also leads to the question of future course development by exploring the possibility of course design and assessment restructuring with a switch to online education with the new mode of technology as the trend.

INTRODUCTION

In the 21st century, game playing has become more popular and commonplace. Academics, scholars, educators, and practitioners have been discussing the incorporation of *gamification* in classroom learning, which is referred to as an academic term or even pedagogy used in learning through games to improve students' English language competence. Gamification reflects an innovative and captivating learning activity (Redjeki et al., 2021). This research investigates tertiary learners' and educators' perceptions

and attitudes toward gamification in both online and face-to-face classrooms during and before the outbreak of the pandemic in Hong Kong. This study also focuses on the practicality and limitations of game-based learning in motivating and engaging students toward sustainable learning in remote and traditional classrooms in higher education in Hong Kong.

LITERATURE REVIEW

There have been studies on the aims and benefits that gamification can bring to classroom

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The Quarterly Review of Distance Education, Volume 23(3), 2022, pp. 35–56
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ISSN 1528-3518
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learning in a holistic view (Campillo-Ferrer et al., 2020; Kotob et al., 2019). Many researchers have demonstrated the advantages of technology-based methods in language learning and teaching. In the existing literature, game-based learning has successfully promoted several motivational strategies that can be used individually or in combination owing to the visual and interactive features of technological resources, which are proven to increase students' attention span in classes (Luu et al., 2010). Instructional technology, including computers and other media, helps minimize the projection of fear of making mistakes since computers can remain unbiased, accurate, and nonjudgmental (Luu et al., 2010). It is also proposed that game-based learning has undoubtedly changed the academic environments and traditional teaching styles by significantly modifying the roles of teachers and students (Kotob et al., 2019). Some quasiexperimental studies conclude that Kahoot is a creative and effective tool to promote motivation, engagement, and a meaningful learning atmosphere among learners. For instance, Kotob et al. (2019) have examined the effect of applying a gamification strategy on students' motivation and achievement specific to Arabic language learning (Kotob et al., 2019).

While the existing literature either focuses on the prepandemic era or the effectiveness of gamification on non-English subjects, the data documented in this research are the results from the respondents' and interviewees' ongoing experience in learning and teaching in the years 2020 and 2019, respectively, which were at times of waves of COVID. The mode of learning and teaching switched from face-to-face classrooms to online at all levels in the educational domain. Therefore, studies in the existing literature constitute the framework for further study on the sustainability of one of the most popular gaming tools in classrooms, Kahoot and other gaming platforms, concerning the validity, effectiveness, and possibility of expansion of other innovative and original alternatives to motivate undergraduate students to learn effectively, rather than solely

focusing on general ideas about the benefits and limitations of learning through games. In addition, digital learning has become one of the fundamental discourses in language education, given the advancement of technology, increasing the mobility and fluidity of participants, physical localities, and time. The evolution of e-learning significantly impacts the sustainability of new ways of learning, as illustrated by the physical constraints from e-books to big data. Despite these, the existing research primarily offers macro lenses to the impacts of digital learning; limited research delves into a micro point of view to specifically relate games to English language learning in universities. Even though there are studies analyzing learning grammar through games in the educational discourse, those games are limited to traditional physical games like storyboards and flashcards but not digital games or mobile applications. Not only are those games outdated and repetitively used through generations, but they are also usually tailor-made for younger children to learn grammar and vocabulary through games. Learning through games is always associated with vocabulary-building tasks and grammar improvement. There have been limited analyses on learning and teaching academic English in universities through fun games.

In addition, the investigation of the essentials and practicality of various games in classroom settings are expanded based on the substantial literature review that Kahoot is one of the most popular and manageable gaming platforms appropriated by students and teachers. This research is grounded on the continuous growth of popularity of digital learning platforms and tools in this new technological era, accelerated by the global pandemic, which has been constructing a new canon in experimenting with the expansion of learning and teaching technology in classroom settings at all levels. However, rather than solely focusing on students' learning outcomes, this research juxtaposes and compares the learning and teaching behaviors of both learners and educators with the measurements of the effective-

ness and motivational level toward learning and teaching in face-to-face and online classes before and during the pandemic by both groups of respondents concerning their real-life experience.

While active learning can be cultivated via problem-based collaborative games in a comprehensive mathematics university course in Hong Kong, for instance (Fridolin et al., 2019), this research paper complements the scarcity of studies on the evolving learning and teaching behaviors in English classrooms in higher education, especially in academic contexts. The existing literature reviews are mostly confined to digital classrooms in general but not in the specificity of gaming tools concerning English language classrooms in higher education, especially in the tertiary education setting in Hong Kong. Apart from centering on English language learning and teaching both offline and online before and during the pandemic in Hong Kong, the study's other main variables also include the comparison of the effectiveness and motivation levels of various popular games for young adults in English learning acquisition across disciplines with a switch of the types of gaming tools and classroom settings. Exploring the possibility and potential to blend in something fun and relaxing in scholarly and serious contexts is interesting. This study aims at prioritizing different mainstream gaming tools at the current moment and recognizing game-based learning as a new form of learning and teaching medium under the alteration of learning and teaching behaviors among university students and English language teachers in Hong Kong, and to what extent has this successfully motivated university students for effective learning with a stronger sense of learner engagement.

Different literature reviews have validated much research proving games can capture student interest and facilitate active learning, and playful environments are constructive for student engagement. However, the gaming platforms closely studied usually are related to physical and mechanical forms, such as badges, realia, props, playing cards, board

games, and dice. Emotional elements in gamified classrooms have also been researched into narratives, identities, collaboration, progressive challenges, and competitions. However, this research is conducted based on the rationale that most interactive and innovative approaches to learning and teaching in academic contexts are usually practiced in western countries but seldom in academic discourses in Hong Kong. It is vital to encourage students to be in charge of their learning through meaningful activities to discourage them from passive engagement and participation. Active learning promotes independent and critical thinking since learners need to understand and apply what they are learning by engaging in content rather than purely listening. Unlike continuous assessments and examinations, gamification performs the functions of simultaneous learning and captures learners' interest owing to the avoidance of negative feelings of failure from teachers' feedback.

Furthermore, it is essential to note that the extent of the application of gamification in classrooms is hugely determined by the nature of the subject and its specialism. It is said that it would be theoretically more accessible for educational practitioners to design and implement games for mathematical and scientific subjects in which standardized sets of formulas, model answers, and computerized systems can benchmark. In particular, it is more challenging to design and apply gaming platforms for assessments and evaluation of language and humanities subjects due to their subjective nature, which depends on individual teachers' perceptions and marking rubrics. Each class is hypothesized to develop and establish a distinctive set of games each time for every English language class in universities in Hong Kong, given that the grading criteria are individualized for the assessments in English language courses, especially writings in any discourse usually based on human decisions rather than computerized systems by default. Therefore, this study furthers the impacts of incorporating gaming elements in English lan-

guage classrooms in the context of higher education with the comparison of both virtual and face-to-face modes before and during the pandemic in Hong Kong. The collected data is used to evaluate the sustainability of digital learning, the fluidity and flexibility of using various gaming platforms to motivate students' active learning, and the extent of agreement and awareness of its effectiveness from the perspective of educational practitioners. While the mainstream studies of gamification acknowledge its effectiveness for educational reasons in a macroview, this research focuses primarily on analyzing its impacts on English language learning in university settings, the ease of its application by students and teachers, and the limiting factors in Hong Kong in a regional view. This research forms a fundamental framework for futuristic research of expanding to a larger scale of settings in response to the adaptability to the ever-changing situations of pandemics in different countries.

One of the main variables of this study includes the investigation of English language learning from the experience of university students from different disciplines in Hong Kong and university English teachers teaching across the curriculum. The data analysis focuses on language learning and teaching rather than mathematical and science subjects, which rely on computerized systems to evaluate students' learning objectives. While the canon of mainstream study mainly focuses on the macro-view of benefits and limitations of gamification in classrooms in general, this study examines, in particular, the university contexts in Hong Kong from the points of view of both learners and educators studying and working in tertiary education. The other variable considers the comparison of the applicability of gamifying classrooms in face-to-face and online classrooms in the aspects of its effectiveness in motivating students for active engagement and frequency of use of games by university teachers in Hong Kong. Most data in the existing literature discourse originate from theoretical principles of gamification and digital learning. However, they do not specify

any particular period of study as a continuous timeline for comparing student and teacher learning and teaching behaviors from both groups of participants. The current data analysis delves into the critical period of a global pandemic, which can be argued as a turning point of a substantial transformation in the educational sector. Thus, this research complements the existing discourse to offer a more holistic view on deploying gamification as a motivational tool for university learners by further analyzing the preference of university students and teachers over certain individual types of games in English language classrooms both physically and virtually, reasons of popularity of those games, the respective ease of application, the availability of resources and support at the institutional levels, and finally recommendations and projections toward the future development, advancement and revamp of courses. Furthermore, this research also considers how gender, social background, and level of English language proficiency of students become dominant factors to govern students' perceptions of the types of games that teachers should use, which could impact the learning outcomes with different teaching approaches in university classrooms.

METHODOLOGY

Two sets of digital questionnaires were first administered and distributed to university and college students and teachers in Hong Kong in various English language courses at different levels with 76 respondents, including 69 university and college students and 8 English language teachers, for 1 month in the last quarter of 2021. The time chosen for data collection was due to students' and teachers' experience teaching and learning in virtual classrooms. Once the classroom participants had a one-semester experience using online platforms for remote learning and teaching, it forms the basis for advancing the technology platforms to create a simultaneous and interactive learning environment to enhance teacher-student

and student-student engagement. Each questionnaire was designed to consist of three sections, which first include the personal backgrounds of participants, followed by the second section documenting questions about students' perception and preference toward the experience of gamifying classrooms, and the last section asking about teachers' experience of incorporating games in classroom learning before and during the pandemic in Hong Kong. The questionnaire mainly features the perceptions and the recount of individual experiences about using various games in face-to-face and virtual classrooms among the university and college student group and English language teacher group of participants. The chosen types of games to be included in each questionnaire are based on the most popular, shared and frequently used games experienced by the current teachers in terms of the number of users in the educational sector in Hong Kong.

The student sample was selected based on the commonality that they are all Chinese learners of English language for second language acquisition, who are all students in tertiary education located physically in Hong Kong but using Zoom as the dominant learning platform in their online English classrooms to replace face-to-face classrooms during the pandemic. These students, aged between 17 and 22, varied in terms of academic backgrounds, disciplines, and levels of English competency. Nevertheless, learning English across different curriculums and disciplines has been compulsory for these learners. Almost all have had the learning experience in face-to-face and virtual English classrooms before and during the pandemic era. Likewise, the teacher sample was collected according to the ground that all surveyed and interviewed English language teachers have at least 5 years of teaching experience in English across curriculums in tertiary education in Hong Kong. The subsequent voluntary and follow-up interviews were conducted via Zoom afterward among 10 students, of which 5 are male undergraduate students and the other 5 are female undergraduates. Among the undergraduate

interviewees, 5 are from The Hong Kong University of Science and Technology, while the other 3 are from the City University of Hong Kong, and 2 come from The University of Hong Kong. The second group of interviewees comprises 8 English language teachers coming from different universities and colleges; in which 3 English language teachers are from The University of Hong Kong, 3 are from the City University of Hong Kong, one comes from The Hong Kong University of Science and Technology, and the other one comes from College of Professional and Continuing Education, CPCE, The Hong Kong Polytechnic University.

Among the student respondents in questionnaires and surveys, a vast majority (90.7%) are undergraduate degree students from different disciplines and specializations taking English language subjects across curriculum among different universities in Hong Kong during the pandemic era. More than half of them (63.2%) are currently studying bachelor's degree programs at The University of Science and Technology, followed by undergraduates from The Hong Kong Polytechnic University (23.7%), City University of Hong Kong (5.3%) and King's College of London (1.3%). A vast minority of them belong to the group of college students (5.2%) in higher education before their admission to universities, who are studying for associate degrees and higher diploma programs in HKU SPACE Community College (2.6%), HKU SPACE Po Leung Kuk-Stanley Ho Community College (1.3%) and HKCT Institute of Higher Education (1.3%). Among them, 37.7% are studying in undergraduate degree year 2, followed by 27.5% from undergraduate degree Year 1 and 26.1% from undergraduate degree Year 3. Less than 9% are associate degree Year 1 to Year 2 and higher diploma Year 1 to Year 3 (Table 1).

Apart from an educational background and the level of competence in English language acquisition, gender also plays a role as a determinator of the competence and attitude toward game users in classrooms. Respondents are asked to indicate their gender in the

TABLE 1*Academic Background of Student Respondents in Questionnaires*

<i>Academic Program</i>	<i>Academic Year</i>	<i>Percentage</i>
Undergraduate degree	Year 1	27.5
Undergraduate degree	Year 2	37.7
Undergraduate degree	Year 3	26.1
Associate degree and higher diploma	Years 1 to 2	8.7

TABLE 2*Proportion of Student and Teacher Respondents*

	<i>Students</i>	<i>Teachers</i>
Group 1 respondents		
Group 2 respondents	90.7%	9.3%

questionnaires. Interestingly, a majority are males (72.4%), while a minority are females (26.3%). In addition, 90.7% belong to the student group, whereas 9.3% are English language teachers in universities and colleges in Hong Kong (Table 2). Further data analysis later reflects how demographic and other gender variants can govern the competence of digital technology, the practicability of gamification and thus the effectiveness and success of gamification in classrooms, which influence the level of the interactive learning environment and student-teacher relationship in both online and face-to-face classrooms.

RESULTS AND FINDINGS

This research juxtaposes the transformation of physical and psychological behaviors of learners and educators toward various game-based platforms in online classrooms from the first semester shortly after the outbreak of COVID-19 till the following academic years and face-to-face classrooms before the pandemic in Hong Kong, concerning the effectiveness of

learning, student engagement, motivation and incentive, motivation and effective; and limitations and suggestions. It is generalized that:

- Most students and teachers have established the habit of using Zoom.
- Most students and teachers have found the ease of exploring other digital learning and teaching platforms influenced by the pandemic.

Game-based learning is an interactive learning methodology and instructional design strategy that integrates educational content and gaming elements by delivering interactive, game-like formats of instruction to learners (Fridolin et al., 2019). Moreover, such learning integrates experiential learning and intrinsic motivation with game applications with explicit learning goals, allowing learners to engage in complex, problem-solving tasks and activities that mirror real-world, authentic situations (Fridolin et al., 2019). Physical classmates could be simulated during the pandemic with simulation and physical artifacts.

Learners’ Perception and Attitude Toward Gamification Among Universities and Colleges in Hong Kong

Among the student respondents, a vast majority (87%) of university and college students indicate a positive perception of the effectiveness of classroom learning through gamification. On the other hand, only 1.4% disagree that learning through games is effective. More than one tenth (11.6%) agree that learning through games is effective, while more than half (55.1%) strongly agree that teaching strategy is effective. More than one third (31.9%) believe that it is somehow effective (Figure 1). In the view of the perception of the effectiveness of gamification toward classroom learning from students’ perspective, a majority (73.9%) think that incorporating games is a constructive means to learn. Fifteen point nine percent regard this approach as the most effective, followed by 58% who perceive gamification as very effective in tertiary education, and 18.8% are neutral. Five point eight percent disagree that gamification is an effective pedagogy in helping university and college students to learn better, while 1.4% regard it as the least effective way (Figure 2).

In correspondence with the measurement of the effectiveness of learning in online classrooms, students’ perception of being motivated to learn through games is a considerable factor

contributing to whether the learning experience is effective. 94.2% of student respondents reveal that learning through games significantly motivates them to participate fully in classrooms. In contrast, 2.9% disagree that incorporating games in classrooms effectively motivates students to learn better, while another proportion of 2.9% is neutral toward gamification in classrooms. Regarding the degree of effectiveness of gamification in motivating students to learn better, a vast majority of the student respondents (76.8%) hold the view that learning through games in university classrooms is the most effective (15.9%) and very effective (60.9%) respectively as a motivational drive to learn better. 15.9% are neutral, whereas 7.2% reckon it is not effective (5.8%) or the least effective (1.4%) pedagogy in motivating learners (Figure 3).

More than half of them (53.8%) believe the major reason is that learning through games in classrooms is fun, followed by 26.2% regard visuals and colors are more appealing than plain words, which come as the second most important concern. Interestingly, more than one tenth of student respondents (10.8%) explain that they want to win over their classmates, demonstrating peer influence as an important factor in governing class participation. Less than one tenth (7.7%) feel that gamification encourages them to accomplish tasks through teamwork, which motivates them to learn with peers. One

FIGURE 1

Perception of Student Respondents Toward Effectiveness of Gamification in Classrooms

2. Do you think learning through games is effective in classrooms as a learner?
69 responses

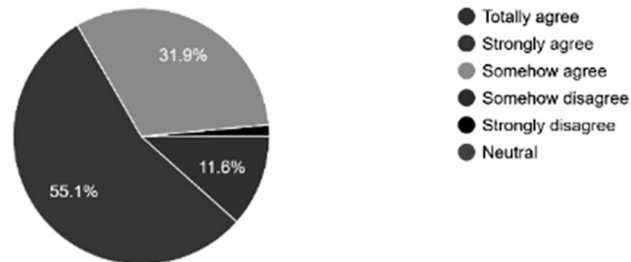
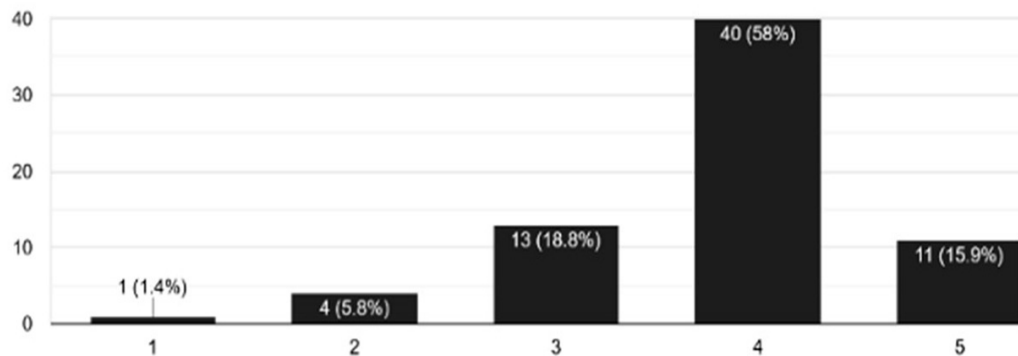


FIGURE 2

Degree of Effectiveness of Gamification Toward Learning From the Perspective of Student Respondents

10. How effective do you think incorporating games in classrooms can help you learn better? (5 as the most effective, 1 as the least effective)

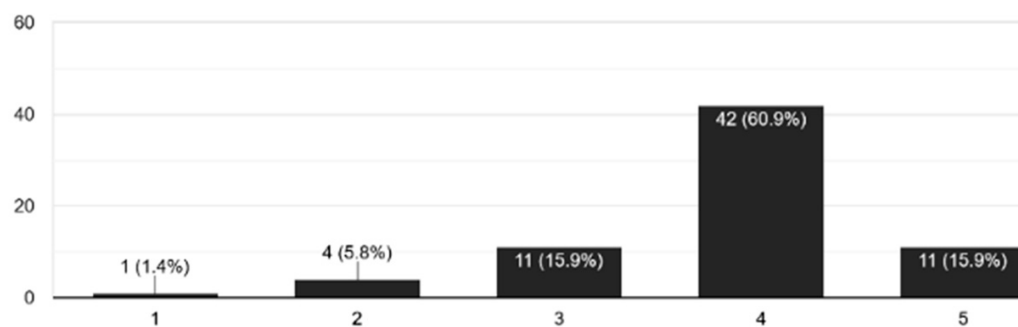
69 responses

**FIGURE 3**

Degree of Motivational Drive by Gamification From the Perspective of Student Respondents

9. How effective do you think incorporating games in classrooms can motivate you to learn better? (5 as the most effective, 1 as the least effective)

69 responses



point 5% believe that playing games online has become the trend, so it is necessary to incorporate games into classroom learning (Figure 4).

Meanwhile, just 5 student respondents disagree that learning through games can motivate them to learn better. Among respondents who show a negative correlation between gamification and motivation, 40% reckon the common perception can justify that learning is always

dull and boring. One fifth (20%) indicate that even though games are incorporated in classrooms, they are incomparable to the fun of video games they play in pastimes. Similarly, one fifth (20%) believe that learning in classrooms should be serious and the other one fifth (20%) explain their concern that they do not want to communicate with classmates through games (Figure 5).

FIGURE 4

Reasons Explain Why Gamification Can Motivate Students to Learn Better

4A. I think learning through games can motivate me to learn in a better way because...

65 responses

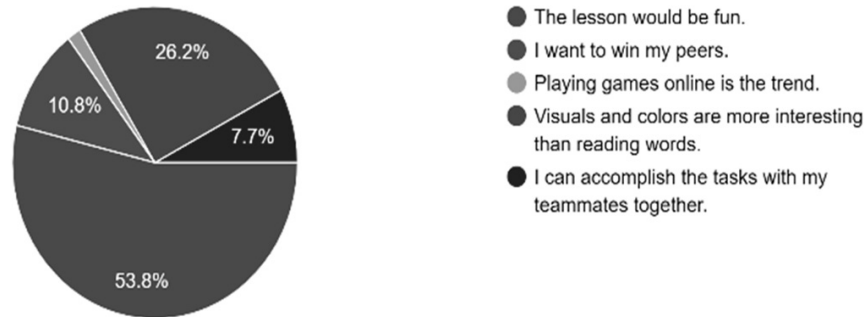
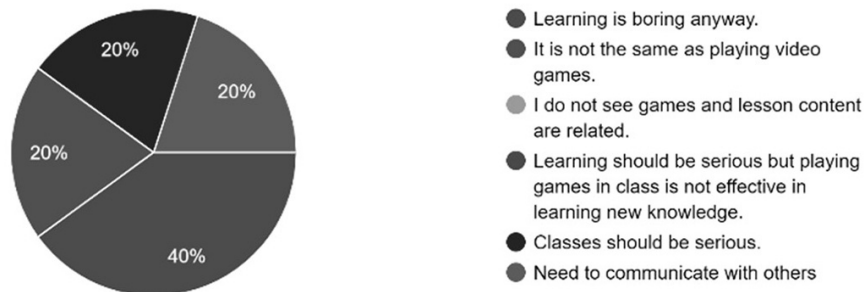


FIGURE 5

Reasons Explain Why Gamification Cannot Motivate Students to Learn Better

4B. I do not think learning through games can motivate me to learn in a better way because...

5 responses



Students' Recount of University Teachers' Experience in Using Game-Based Platforms and Other Innovative Digital Tools in Online Classrooms and Face-to-Face Classrooms for English Language Subjects

While the existing literature review focuses mainly on the benefits and limitations of applying games in classroom activities in general, this study projects a more micro view and specific approach to evaluate the selected 8

types of games based on the popularity and number of users in classroom settings in the world. According to Kotob et al. (2019), Kahoot is the most popular digital tool that encourages creativity and innovation. Among all the game-based platforms, more than half of the student respondents (55.4%) recall the experience of having their English language teachers using Kahoot in their virtual classrooms in their universities or colleges in Hong Kong in both online classrooms during the pandemic and face-to-face classrooms before

the pandemic. The shared document is the second most common digital tool in language classrooms. Almost one fifth (18.5%) of students have the experience of being asked to use shared documents. 7.7% have experienced roleplays in English language classes, followed by 4.6% who have used storyboards before. A small minority (3.1%) have used Class123. The other 3% indicate that they have been instructed to use Soqqle and Flipgrid, with 1.5% of students out of 3% revealing their English language teachers have used Soqqle and Flipgrid, respectively. 5.5% reveal that they have never experienced any digital learning tools in classrooms except Zoom, the major communicative classroom platform during the pandemic in Hong Kong (Figure 6).

Campillo-Ferrer et al. (2020) point out that teachers experiment with different digital teaching strategies which focus on visuals, such as images, paintings, and shapes; auditory through rhythms, chants, and tones; and kinesthetic like body movement and gestures, to help students to stay engaged with the taught materials in remote learning. One of these teaching strategies is learning through gamification. Regarding the comparison of the frequency of usage of various games in online and physical classrooms, 34.8% of student

respondents believe that teachers have been incorporating games in online classrooms as much as in face-to-face classrooms. While 33.3% claim that more games should be designed in physical classrooms, 26.1% recall more games have been incorporated in online classrooms during the pandemic instead. Only 5.8% cannot recount their learning experience with learning through games in classrooms (Figure 7).

Kahoot Is Favored as the Most Popular Game-Based Platform in Digital Learning Among University Students and Teachers in Hong Kong

Among all the game-based platforms, Kahoot is regarded as the most popular game by English Language teachers in both online and face-to-face classrooms. It has a user-friendly interface that requires a low level of technical expertise, and Kahoot increases undergraduate students' motivation because of its easy-to-use implementation (Kotob et al., 2019). According to research before and after tests (Kotob et al., 2019), Kahoot is one of the most effective digital tools for encouraging creativity and innovation. The studies found that active participation of students stimulates

FIGURE 6

Students' Recount of Using Different Game-Based Platforms in the English Language Learning Experience

3. What are the innovative learning tools that your teachers have used in classrooms for English language teaching?

65 responses

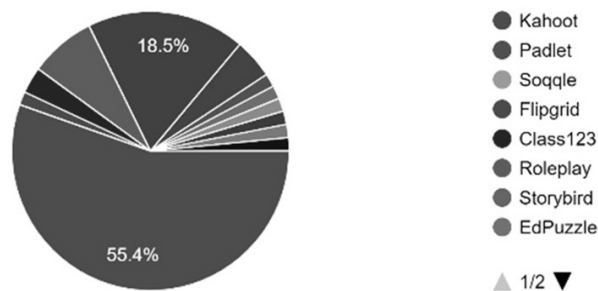
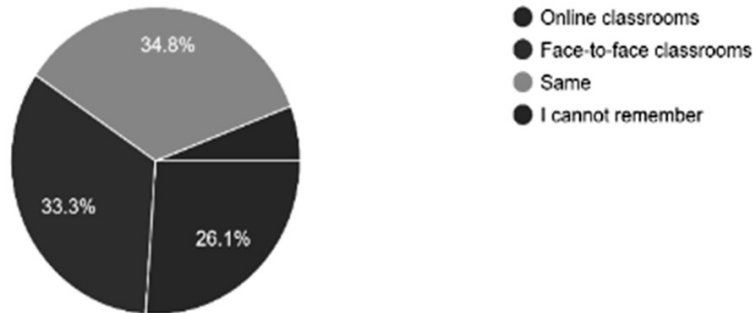


FIGURE 7

Students' Comparison of Their Teachers' Usage of Games in Online Classrooms During the Pandemic and Face-to-Face Classrooms Before the Pandemic

7. Do you think teachers use more games in online classrooms or face-to-face classrooms?
69 responses



the imagination and creative capacity to take learners' tests and learn from teachers and classmates. It successfully increases students' engagement, motivation to learn, and ambitions for success by creating a stimulating and competitive environment. Both students and teachers can create a positive learning experience using only pictures, videos, and questions to foster an innovative social learning experience.

Furthermore, Kahoot is easily accessible by any device with an internet connection, smartphones, tablets, or laptops. It thus promotes synchronous interaction that encourages real-time collaboration and fosters a sense of community, promoting participatory evaluation that favors the development of cross-disciplinary skills (Kotob et al., 2019). Furthermore, Kahoot and other similar innovative tools have been shown to improve students' ability to understand the meaning of new information, ask questions, make decisions, and draw conclusions that help fulfill learning outcomes. The results also confirm students' positive attitude toward using a digital platform, which can encourage the adoption of these motivating ICT proposals in similar contexts later (Kotob et al., 2019). Concerning the data

on the digital competence of learners, participants welcome these online proposals and feel able to master this platform in terms of game options, basic instructions, and question formulations. More importantly, no specific training or complex technical knowledge is required (Kotob et al., 2019). Given the competitive advantages of Kahoot, particularly the effective outcomes, ease of use, and popularity among learners, it is suggested that the application can be extended beyond vocabulary building and grammar teaching and academic discourse in English language education in universities in Hong Kong.

University Students' Comparison of the Effectiveness Of Gamification in Online Classrooms During the Pandemic Versus Face-to-Face Classrooms Before the Pandemic

In this view, there is a significant remark that the popularity of gamification in classrooms lies in face-to-face classrooms more than in online classrooms. At the same time, a similar proportion of student respondents reckon that teachers use games in online classrooms as much as in face-to-face classrooms,

which illustrates that gamification is not an exclusive approach to be commonly used in virtual classrooms by English language teachers in universities and colleges in Hong Kong only during the pandemic era. On the contrary, the contexts and localities of teaching are not a factor governing the adoption of gamification in classrooms, with or without the impacts of the pandemic and social distancing measures. Considering a small proportion of students fail to recall their learning experience, as shown from the questionnaires, the limitations of the effectiveness of using gamification in teaching and learning will be further analyzed in a later section.

IMPLICATIONS

The Necessity and Need for Gamification in Online University Classrooms During the Pandemic and the Possibility of Transformation From Traditional Teaching Practice to Game-Based Learning

The promotion of game-based learning has undoubtedly changed academic environments and traditional teaching styles by significantly modifying the roles of teachers and students (Kotob et al., 2019). Game-based learning implies more active participation among students who respond more effectively to their current interests in these learning processes. At the same time, such a new platform enhances digital literacy and promotes quality and sustainable education (Kotob et al., 2019). To achieve these objectives, the emergence of new teaching and learning models has encouraged educators, as social actors, to adapt to the needs of learners to develop more motivating and innovative practices (Kotob et al., 2019). Today, remote controls are no longer necessary because smartphones, tablets, or laptops favor implementing these systems due to wireless connections to mobile applications and websites. Therefore, content knowledge and fun can be merged into daily lessons without

needing other intermediate devices due to the advancement and application of information and communication technology. On the internet, a variety of high-quality online platforms can be found, such as Kahoot, Socrative, Quiz, Acadly or Poll Everywhere, and inter alia (Kotob et al., 2019).

However, it poses a challenge to discover the dichotomy and contraction between the internalization of the necessity of gamification in various modes of classrooms by students and teachers and the success of gamification in virtual classrooms versus face-to-face classrooms in enhancing the effectiveness of learning and motivations of university students, especially during the pandemic in Hong Kong. Some interviewed students believe that online games are equally popular in face-to-face and online classrooms. Likewise, games in face-to-face classrooms are being adopted by teachers as much as before the pandemic in Hong Kong when compared to online university classrooms during the pandemic in Hong Kong. While it may be deduced that the trend of incorporating different games in university classrooms to make the classes lively and fun is commonplace during the global pandemic period, some students reveal that the process of gamification is smoother and more effective in face-to-face classrooms even before the pandemic when the online mode of classes had not been adopted. This finding conforms to the earlier finding that more than one third of student respondents (34.8%) in the questionnaire highlight that their teachers have been incorporating games in online classrooms as much as face-to-face classrooms. Similarly, slightly more than one third (33.3%) recall that more games have been incorporated in their formal face-to-face English language acquisition classes. While it may be expected that gamification is getting more popular in online classrooms as digital learning has become the prevailing norm in education across different disciplines and sectors accelerated by the global pandemic, games of different categories and pedagogy have been popular in face-to-

face classrooms even before the outbreak of COVID.

Rather than a surge in the popularity of gamification in virtual classrooms, only approximately one quarter (26.1%) of the student respondents recount their memory of having more games in online classrooms in their learning experience in universities or colleges during the pandemic period in Hong Kong aforementioned. A few interviewed students also concluded that games in online classes could not fully attract students' attention during class, which means that gamification is a less dominant and significant driving force in motivating students to learn in virtual classrooms since face-to-face presence promises students' attention span. In addition, it is suggested there is a possibility that some university and college students may simply ignore the game playing a part in classes during online lessons. On the contrary, teachers can ensure every student engages in the assigned games in face-to-face classrooms due to their physical presence. In this light, gamification is not the only effective way to facilitate students' interaction with their classmates and teachers as much as it is expected. Games cannot guarantee all students are entirely participating in the whole lesson during either online or offline classes. All these findings validate the literature review that gamifying classrooms has undoubtedly brought numerous benefits, such as facilitating active learning and motivating students to learn better. Despite exceptional situations, some students may not recognize the effectiveness of incorporating games in classrooms. As professional practitioners, one cannot overlook the possibility of excluding passive learners in classroom participation despite the relaxing nature of games. Therefore, it is recommended that there should be an alternative strategy from teachers to engage with these minority groups of learners in both physical and virtual classrooms.

Students' Preference of Various Gaming Tools and Perception of Why English Language Teachers Do Not Adopt the Gamification Approach

Regarding the categories and nature of games to be incorporated into virtual learning, almost half of the student respondents (47.8%) claim that they prefer both competitive and collaborative games. More than one fourth (26.1%) prefer competitive games composed of classmates' competitive elements. Level-up games in which students need to proceed to different levels are only popular among less than one fifth (18.8%) of student respondents. Collaborative games are the least popular, in which only 7.2% of university and college students in Hong Kong prefer teamwork during class activities (Figure 8).

University and college students generally perceive that time is the dominant factor for the absence of gamification in university classrooms. Less than half of them (41.8%) believe that teachers lack time to prepare for games to be incorporated in classrooms, especially during the pandemic era. However, almost one fifth (19.4%) perceive their English language teachers are not synchronous with the concurrent trend, and thus, gamification in classrooms has not been adopted. 16.4% believe their teachers may not understand the importance of games, 10.4% interpret their teachers may not know much about games, and 9% believe their teachers may not comprehend the importance and benefits of game-based learning. 1.5% indicate that the absence of games in classrooms is due to the difficulty in designing different games for specific subjects like language, literature, and statistics (Figure 9).

University Students' Perception and Attitude Towards Gamification in General In English Language Teaching Classrooms in Hong Kong

It is interesting to find out that students, in general:

FIGURE 8

Categories of Games Preferred by Student Respondents

6. What kinds of games do you prefer teachers to use during classes?

69 responses

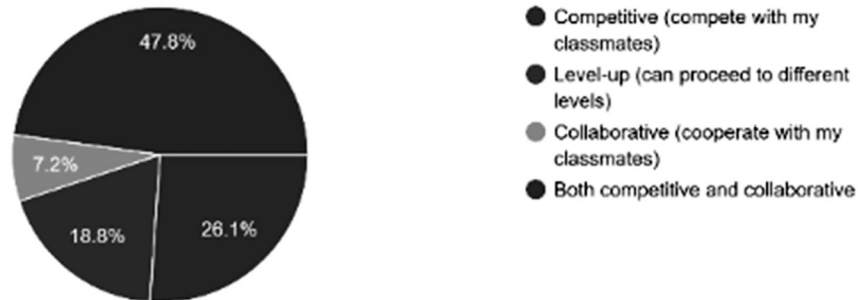
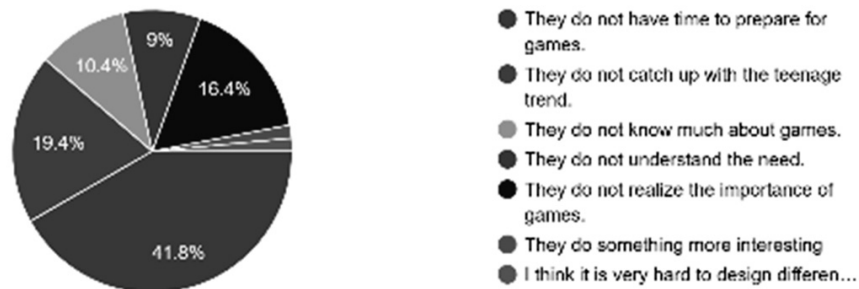


FIGURE 9

Reasons for Teachers Not Incorporating Games in Classrooms From Students' Perspective

5. What are the reasons for teachers not incorporating games in classes?

67 responses



- Students tend to equalize whether lessons are fun and exciting as the determinators for their intrinsic and extrinsic motivation in learning.
- Most assess whether their learning experience is practical, mainly based on whether their teachers can keep their attention long during class.
- Physical sensations to the body and positive psychology are vital in motivating university students to learn better in classrooms.
- Apart from the fun nature of games as the chief motivator, the second most important reason to support games to be incorporated in classroom learning is due to the intrinsic nature that visuals and colors are more sensationally powerful than plain words, followed by learners' desire to win over their peers as the third key factor to conclude that gamification is motivating in both face-to-face and online classrooms.
- In other words, traditional classrooms with teachers' one-way lecturing and teacher-

centered classrooms are no longer enough to satisfy students' need for innovative learning as the new trend nowadays, especially with the acceleration of digital learning impacted by the outbreak of COVID.

Kapp (2012) identifies gamification as "using game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning, and solve problems." An active learning context refers to the various learning approaches and instructional methods such as experiential learning, collaborative learning, cooperative learning, case-based, inquiry-based, problem-based, team-based, and game-based learning. These different models cover the subset of active learning. Hence, active learning is an umbrella concept that encompasses different learning approaches and instructional methods (Fridolin et al., 2019). As aforementioned, almost half (47.8%) of the university and college students respond they prefer both competitive and collaborative games, followed by competitive games as the second most popular type of games (26.1%), level-up category of games (18.8%), and finally collaborative games (7.2%). It is illustrated that university students have greater expectations of the variety of games they can be exposed to during classes owing to the digital learning and technological competency trend. Competitive games in which students compete with their classmates and level-up games require players to proceed to advanced levels progressively are more popular than collaborative games.

Regarding the demographic background of the targeted respondents and interviewees, university and college students belong to a group of more advanced and mature learners who are academically and mentally stronger. Having survived through public examinations, they tend to be more used to a competitive learning environment and thus are relatively more self-driven to win. On the other hand, collaborative games, such as games related to teamwork, are regarded as less popular among these student groups, implying that these student respon-

dents, in general, may imagine their classmates as academic rivals rather than teammates to collaborate and cooperate with. Level-up games are also popular due to the sense of achievement and accomplishment that students can attain by proceeding to another level, which can also be impacted by the prevailing level-up concept designed in video games that students are always exposed to nowadays.

Many studies have proved that friendships play a critical pivot in students' social, emotional, and cognitive development. Liao et al. (2018) find that about 50% of students' achievement-related comparisons are made with their best friends, and they constantly compare themselves with friends. Moreover, some studies indicate that friendship relations are key to maintaining positive student interactions in learning activities. Theoretically, friendships are beneficial for students to situate themselves in competitive learning environments (Liao et al., 2018). In addition to peer bonding, studies show that gender differences can impact preference over competitive learning. Boys are more motivated to participate in game-based learning environments than girls, who tend to have a higher incentive to attain higher scores and win in competitive games than girls (Liao et al., 2018). Gender stereotypes exist and thus play a role in students' learning attitudes, which correspond to the demographic background of student respondents, which are represented by 72.4% males and 26.3% females in the studies mentioned above. When students are involved in an effort-demanding activity like competitions, they need to improve their learning status to win and thus are guided to realize that winning is closely correlated to the level of effort they exert. This cause-and-effect relationship is helpful for the establishment of a positive attitude toward motivational learning (Liao et al., 2018), which is enabled by competitive games in classroom learning. In other words, it is vital to consider other variables, such as English language competency and the gender of learners, when designing the nature

and types of games to be incorporated in classrooms.

University Teachers' Perception and Attitude Toward Gamification in Virtual English Language Teaching Classrooms in Hong Kong During the Pandemic

To analyze from a more holistic view of the practice and success of gamification in university classrooms in Hong Kong during the pandemic, data from English language teachers have also been collected for university teachers' perspectives toward using games in classrooms. A majority of teacher respondents (62.5%) agree that gamification is an effective means to motivate students in universities and colleges to learn better, with 25% agreeing and 37.5% strongly agreeing that incorporating games in classrooms is a practical approach to motivate students to learn. In contrast, more than one tenth (12.5%) strongly disagree that gamification successfully motivates students. In comparison, one quarter (25%) are neutral toward gamification in online and face-to-face classrooms (Figure 10).

A majority of teacher respondents (62.5%) believe in the necessity of positive reinforce-

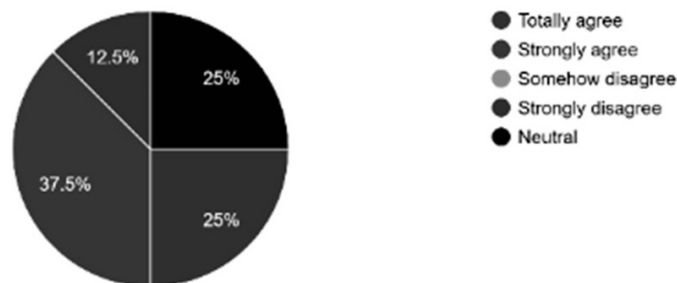
ment toward student motivation with the use of gamification in both online and face-to-face classrooms among universities and colleges in Hong Kong. However, the comparative findings between student and teacher respondents also illustrate distinctive and different perceptions and attitudes toward learning through games among the two groups. As shown from the data analysis, a majority of students (73.9%) think that incorporating games is a constructive means to help their effective learning in English language classrooms, with the major concern being whether classroom learning is fun and interesting, which constitutes more than half of student respondents (53.8%) need for second language acquisition. In addition, almost all students (94.2%) claim that games act as a remarkable incentive to draw their attention in classes and thus drive them to learn dependently inside and independently outside classrooms. In contrast, viewing the teachers' attitude toward incorporating games in both virtual and physical classrooms, more than half of university English language teachers (62.5%) internalize the importance of gamification and other digital teaching tools as the current and upcoming innovative trend. Thus there is a need to adopt a more interactive approach for students by

FIGURE 10

Reasons for Teachers Not Incorporating Games in Classrooms From Students' Perspective

3. To what extent do you think incorporating games in classrooms can motivate students to learn better?

8 responses



devising new pedagogy concerning digital technology to supplement or even replace one-way lecturing in traditional classrooms. Systems that only focus on lecturing and other traditional teaching strategies produce passive learners (Kotob et al., 2019). Spoon feeding techniques in traditional classrooms tend to suppress students' creativity and neglect their strengths, as students depend highly on their teachers' lecturing instead of independent thinking (Kotob et al., 2019). One-way lecturing also demotivates students from learning effectively if lessons are dull and boring. In general, students prefer games to be incorporated in all classrooms more than teachers, given the intrinsic nature of collaborative and competitive games as motivators to get students to work with peers, with a 31.7% difference regarding the popularity of game usage between university students and teachers.

The statistics also demonstrate that all teacher respondents have experience in running their English language classes with games, as shown from the questionnaires that none of any individual teacher respondents claims they have never used games as teaching tools in university classrooms (Figure 11). Nevertheless, it is important to note that when it comes to the practicality and frequency of

the usage of games in English language contexts, only half of them (50%) incorporate games in classes generally for a few times every semester. If there are 13 to 14 weeks in every semester, only 15% to 35% of total class time has been devoted to gamification in university classrooms. One quarter (25%) recount that they include some elements of games in English language courses for more than half of the semester, which means this group of teacher respondents has spent half of the class time incorporating games in English language university classrooms. Meanwhile, only more than one tenth (12.5%) design their English language classes once every week, and the other 12.5% conduct games in classrooms once every two classes.

While a vast majority of university teachers (87.5%) reckon incorporating games in classrooms of any form is constructive in helping students to learn more effectively and positively (Figure 12), it is indicated that there is also a majority of 75% of teacher respondents believe games motivate students to participate more fully in class and learn better (Figure 13). On the contrary, 12.5% of university teachers think gamification is not effective for students to learn better while 25% regard gamification cannot motivate students. It is concluded that

FIGURE 11

Reasons for Teachers Not Incorporating Games in Classrooms From Students' Perspective

2. How often do you use games in classrooms in teaching English Language?

8 responses

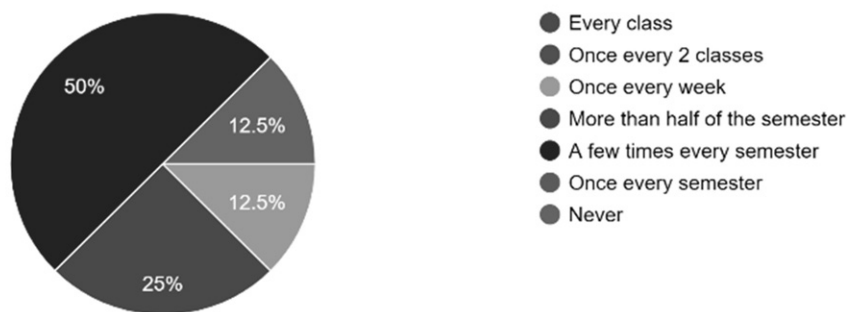
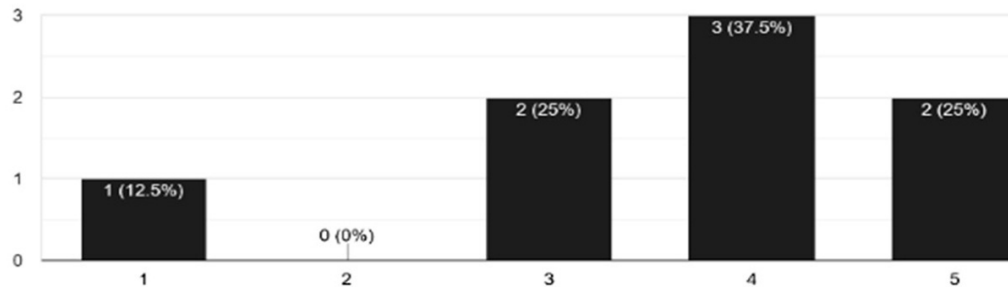


FIGURE 12

University Teachers' Perception of Gamification in Motivating Students to Learn Better

9. How effective do you think incorporating games in classrooms can help your students to learn better? (5 as the most effective, 1 as the least effective)

8 responses



there are striking differences between learners and educators in universities and colleges in Hong Kong regarding students' and teachers' perceptions and attitudes toward the necessity and the effectiveness of gamification toward effectiveness and motivation of learning.

University Teachers' Comparison of the Effectiveness of Gamification in Online Classrooms During the Pandemic Versus Face-to-face Classrooms Before the Pandemic

In terms of effectiveness in using games online and face-to-face, most interviewed teachers believe that student engagement is a major concern. It is easier for teachers to engage with students in face-to-face classrooms due to their physical presence in concrete settings. On the other hand, it is harder to build rapport with students when the lessons go online, making teachers' assessment of students' learning progress more difficult. While students can switch off cameras on Zoom in virtual classrooms, teachers can walk around in face-to-face classrooms to establish a sense of presence. Thus, gamification becomes more inclusive for each student in face-to-face classrooms, in which both active and passive learners are more motivated by gamification in

physical classrooms, making learning more direct and effective.

Nonetheless, there is a possibility that gamification can exclude passive learners in online classrooms since it is more challenging for teachers to supervise every student online. Meanwhile, a few interviewed teachers advocate that the ease of incorporation of games in online classrooms and face-to-face classrooms are both at a similar level. The most dominant reason that relates to the positive psychology among university students is that the fun nature of games in lectures generally attracts learners.

Limitations of Gamification in Remote and Face-To-Face Classrooms

Most of the student interviewees believe there would be differences in the effectiveness of game usage in online in face-to-face classrooms. Most of the students reckon that gamification is more effectively implemented in face-to-face classrooms before the pandemic rather than in virtual classrooms during the pandemic in tertiary education in Hong Kong. Interestingly, it is generally believed that learning through collaborative games is more effective in face-to-face classrooms than in virtual classrooms, as shown by the fact that

most student interviewees internalize the notion that face-to-face classrooms promote collaboration and effective communication compared to remote learning. Apart from collaborative games, competitive games online may be less fun and interesting than games in face-to-face classrooms, explained by the difficulty of online classrooms in establishing a competitive environment to encourage students to engage fully in competitions. Comparatively, face-to-face communication enables learners to interact instantly and accomplish given tasks collaboratively more easily and comfortably, providing concrete physical settings which allow spontaneous and direct communication instead of potential communication barriers in intangible virtual channels. Hence, face-to-face classrooms facilitate collaborative and competitive games more effectively, helping and motivating students to learn better than in online classrooms.

In addition, online classrooms pose a challenge for teachers to create a positive and proactive learning atmosphere, and thus is more difficult to set up the mood for game playing in virtual classrooms. Furthermore, the difficulty in implementing gamification for all students in online classrooms without excluding any passive learners is a crucial hindrance to student engagement, including the constraint of “monitoring whether students are following house rules during online classes since some students can possibly turn off the cameras and mute themselves,” according to one university teacher interviewed. One interviewed student cites an analogy that lecturers can spot any student who is not paying attention in physical classrooms. Thus, the internalization that students should listen and respect the lecturers can, in return, facilitate students to concentrate better and reinforce students’ full participation in face-to-face classrooms. One interviewed student has internalized the idea that “online learning is dull and boring anyway,” and he is always distracted at home, especially when sitting in a comfortable private area. It is generally believed that learning becomes more proactive in face-to-face lessons. Some interviewees pro-

claim that learning through games would be more “interactive, exciting, fun and attractive” with face-to-face and direct communication since the sense of student engagement increases behaviorally and emotionally in physical classrooms. According to another teacher respondent, “face-to-face classrooms can trigger more interactions between teachers and students, and among students,” resulting in better student-teacher and student-student rapport.

On the other hand, the technological nature of virtual classrooms hinders the effectiveness of incorporating games into the digital learning experience. Among the interviewed students, it was found that they sometimes experience delayed responses from teachers and classmates due to internet connection problems in remote classrooms. Thus, they reckon face-to-face learning to be more effective and direct.

The Gap Between University Teachers’ Acknowledgment of The Vitality of Gamification in Classrooms and the Frequency of Its Usage in Practicality

Although most university teachers recognize gamification as a constructive, effective, and innovative means of facilitating students’ learning, only 12.5% of teacher respondents incorporate games in their English language courses once weekly and once every two classes, respectively. Likewise, none of the teacher respondents disagree that gamification in classrooms effectively motivates students to learn (Figure 13). The limitations of the practicality of gaming in both online and face-to-face classrooms can be justified by numerous obstacles in adopting gamification and other digital teaching tools in university classrooms. A large majority (75%) of teacher respondents believe that one major hindrance in incorporating games in classrooms is the tight teaching schedules (Figure 14). half of them (50%) believe that there is a lack of training and resources received and that somehow games and the content of courses are not interrelated (Figure 14). The third most common limitation

FIGURE 13

University Teachers' Perception of Gamification Toward Motivating Students' Learning

8. How effective do you think incorporating games in classrooms can motivate your students to learn better? (5 as the most effective, 1 as the least effective)

8 responses

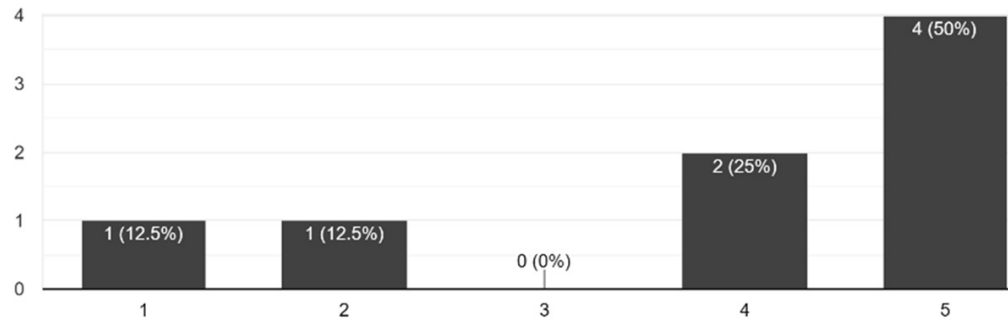
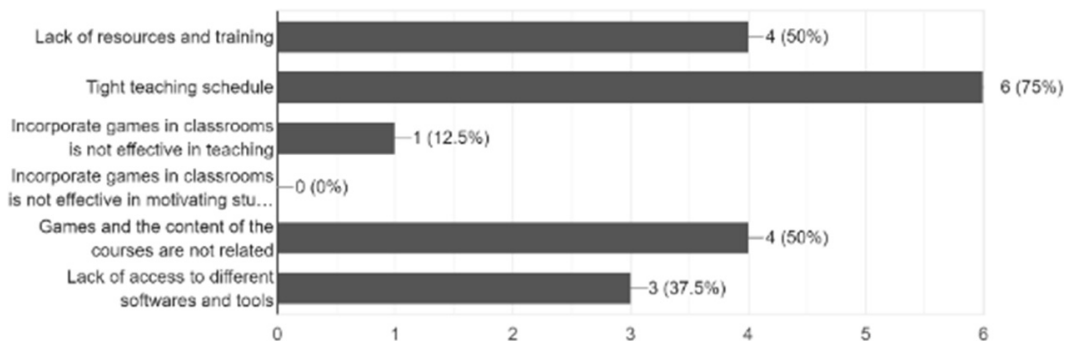


FIGURE 14

Reasons for the Absence of Games in Classrooms From Teachers' Perspective

10. What are the limitations to incorporate game in classrooms?

8 responses



(37.5%) is that there is the limited access to different software and tools to support learning through games in classrooms (Figure 14). The use of realia and concrete props are unlikely in virtual classrooms during the pandemic. Therefore, the implementation of gamification in online classrooms requires more institutional support, training to be received, and technology know-how than in the status quo, which further limits the feasibility and scale of

game-based learning in virtual classrooms during the pandemic.

Effectiveness and Practicality of Incorporating Games in Online Classrooms Versus Face-To-Face Classrooms

Regarding the kinds of innovative teaching tools used in classes, most interviewed univer-

sity teachers name a few, including Zoom Polling, Zoom Whiteboard, Kahoot, Padlet, Word Clouds, Everything Poll, Graph Drawing and Lucky Draw. It is also noted that Kahoot,

Padlet, Spotify, Word Clouds, and Lucky Draw are their preferred tools in both online and face-to-face classrooms for English language teaching in universities and colleges in Hong Kong. The results of interviews with teacher respondents revealed that university teachers who deploy the concept of gaming in classrooms enhance the level of spontaneity, interaction, and participation among students in classes. With games, concepts and abstract ideas can be visualized to be comprehended more easily and effectively using multimodality like colors, symbols, graphs, shapes, videos, and music through games.

Furthermore, the interviewed teachers believe that games are catchy to students' attention, and teachers can use gamification to monitor whether students are attentive in class at that time. However, one interviewed teacher holds an opposite view by raising her concern that there is a possibility that "some students may feel harassed by the compulsory gaming in classrooms and students may also believe learning should be serious instead." Most interviewed English language teachers explain the use of games in classrooms can be hindered by the application of games and other digital tools relies too much on the content of the subject knowledge at that time. Sometimes, ideas and inspirations from games can be interrupted by a lack of originality. Besides, the unstable internet connection makes smoothly adapting games in online classrooms during the pandemic even more difficult.

While gaming tablets and social media have been a major part of students' lives, teachers have faced a significant challenge in students' motivation and achievement inside classrooms. Learners can get easily distracted and show a loss of interest. Thus communication between students and teachers becomes remote and fragile, especially with the distancing learning during the pandemic (Kotob et al., 2019). In particular, some teachers even find

digital platforms discouraging, as they have to do extra work to adjust the pace of classes to achieve a better understanding of the content. Adjustments require enormous effort inside and outside the classrooms to integrate digital content into lesson plans. Intensification of educational adaptations to be made in classrooms is necessary to promote students' proactiveness in content learning, making the learning experience comprehensive and meaningful. Another disadvantage pointed out is linked to the negative attitude of some students toward these digital challenges since not all students prefer to play an active role in classrooms (Kotob et al., 2019). Some feel more comfortable taking notes during classes and studying after classes without using mobile phones for academic purposes. They fear making mistakes in public when using this digital resource or not feeling supported by their peers when asked about content previously worked on in public (Kotob et al., 2019). Further research and information on applying these innovative proposals are needed to better understand and adapt these ludic strategies to students' main interests and demands in higher education.

CONCLUSION AND LIMITATIONS

This research compares and evaluates the success of gamification and the effectiveness of various digital teaching and learning tools used to motivate students in university classrooms in Hong Kong during and before the pandemic. It also explores the possibility and limitations of applying the notion of gamification in virtual classrooms. The research concludes that gamification in classroom learning has been an unavoidable trend in tertiary education in Hong Kong. With data collected from both learners and educators toward English language learning, future research can be extended to compare the data analysis from both pre-and post-tests, with the integration of different games for experiments into the teaching process to assess the level of students'

active participation and motivation toward a more interactive and stimulating environment. The authorities and educational institutions should also offer more resources, training, and technical support to pursue sustainable game-based learning and provide a more engaging and interactive environment for learners in the new technological era.

Acknowledgment: The authors declare no conflict of interest.

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