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A review of Quizizz – a gamified student response system

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Introduction

The purpose of this EdTech review is to highlight the main features of Quizziz as an online tool for formative assessment. It can be used during online or face-to-face delivery and both synchronously and asynchronously. Quizizz is a gamified student response system that has been available since 2015. It was created by a homonymous startup based in Bengaluru (India). By end-2020, Quizizz had more than 65 million monthly active users in more than 150 countries (Naik, 2020).

Contributors to the *Journal of Applied Learning & Teaching* have reviewed a variety of student response systems and interactive tools for student engagement over the past few years: Mentimeter (Rudolph, 2018), Kahoot (Yeo, 2019), Nearpod (Burton, 2019), the now-defunct Zeetings (Stafford, 2020a), Google shared files (Stafford, 2021) and Padlet (Shuker & Burton, 2021). Such Web 2.0 tools have of course also been reviewed elsewhere: for instance, Mentimeter in Gokbulut (2020), Hill (2020), Kuritza et al. (2020), Mayhew (2019), Mayhew et al. (2020) and Moorhouse & Kohnke (2020)). We also cannot claim to be first in reviewing Quizizz (see Basuki & Hidayati (2019); Chaiyo & Nokham (2017); Junior (2020) and Zhao (2019)). Our review, however, adds to the existing literature by sharing our personal experiences with Quizizz and by providing a relatively detailed description of how it can be used beneficially, especially for multiple choice questions.

We start off with our rationales to use student response systems such as Quizizz. In essence, we strive to increase student engagement and help our participants to learn better. The aim is not to only engage those students who tend to be interactive in any event, but ideally all of them. Thereafter, we describe in some detail how Quizizz can be used and set up. Our discussion of how to use Quizizz focuses especially on multiple choice questions. Towards the conclusion of the article, we briefly compare Quizizz with Kahoot. Quizizz is a useful tool that adds to the toolbox of higher education teachers. We recommend to use a wide variety of methods to help our participants learn. These methods are certainly not restricted to software and, for instance, also refer to the mix of lecture and discussion (and the use of different discussion protocols: Brookfield, 2012, 2016).

Rationales for using Quizizz in an online environment: student engagement in light of the non-use of cameras and microphones

In this section, we share our thoughts and approaches to students' not using cameras and microphones as much as hoped for. As a result of our not seeing and not hearing most of our students, it is important to 'see' and 'hear' them in different ways. Quizizz is but one of the many ways that we can engage our students in an online environment (and it is also suitable for face-to-face delivery).

One of Alfred's major challenges in his initial online teaching was student engagement. Being relatively new to teaching, he had been cautioned by other lecturers that student engagement in our context of tertiary education in a private education institution in Singapore was an uphill task, especially in the online delivery mode (that had become the 'new normal' in Singapore since April 2020, no thanks to the COVID-19 pandemic: see Tan et al., 2022). A face-to-face teaching and learning environment is oftentimes perceived as making student engagement easier: after all, one can see the (at least in a pre-COVID environment, unmasked) students and to some extent, gauge their responses by observing their body language (e.g. facial expressions and eye contact). In contrast and in our experience, students often turn off their video cameras. Consequently, we are unable to use body language cues and we must obtain additional feedback on our students' experiences. However, a cautionary note is in order: body language and facial expressions are unreliable, as it is impossible for instructors to look into the minds of their students, and some students may pretend to understand something (for instance, through vigorous nodding) and others may just play-act behaviours

and emotions such as attentiveness or amusement.

A discussion of the use of students' cameras is worthwhile in our context of attempting to engage our students. Initially, Alfred gently nudged his students to turn on their cameras during lessons, but their compliance was usually short-lived. Some would turn on their cameras upon request before the start of class, but turn them off again soon after the lecture commenced. A particularly creative form of protest was the practice by some participants to position their cameras to face the ceiling! Another amusing instance of student creativity was that a student uploaded a short video on an endless loop that showed him walking around at home, preparing food and drinking water etc. During the lesson, Alfred asked that student for inputs, but there was no response from him although Alfred could still see him walking around the house. Another student helpfully pointed out that he was not there physically, but that Alfred and his students were looking at a recorded video. So much for students' technological ingenuity and 'passive resistance' to being surveilled!

A typical PC or laptop monitor can show 25 students at any one time using the Zoom platform (see Stafford, 2020b). Whilst this is insufficient for seeing all participants of larger classes, this number is further reduced significantly when the instructor begins to share their screen. Other platforms such as Blackboard Collaborate have similar limitations. At first, Alfred was adamant in checking regularly whether students kept their cameras on, but he quickly realised that precious time was wasted while making these regular checks. Moreover, students who wanted to learn more were put off by the regular intervals of roll calls and awkward silences resulting from non-responsive students. After continually trying to get students to be less camera-shy over a couple of initial sessions, Alfred eventually reminded himself that it was not his role to police his students or to catch 'wrong-doings', but to inspire and engage them. He henceforth decided to focus on the big picture and to give students the benefit of the doubt – that although their cameras were off, they could still be attentive and follow the session.

Jürgen's experience with students' cameras is similar, yet also different. Similarly to Alfred, Jürgen was also initially asking students to turn on their cameras. This was usually not adhered to, or just for a short time, as in Alfred's experience. The differences are twofold: first, Alfred's students can be described as pre-university students who are being prepared to enter a proprietary diploma programme (which is equivalent to the first year of university studies). Jürgen's students are Bachelor (equivalent to second and third year) students and Master's students and there is a difference in age, experience and maturity. Especially Master's students have often the 'gift of the gab' and are comfortable to, and eloquent in, presenting their views while on camera.

Secondly, there is a cultural difference in our approaches. Alfred is Singaporean and his upbringing and schooling took place in an environment that can be described as comparatively strict, where the teacher is a relatively unquestioned authority figure. Although he has spent more than half of his life in Singapore, Jürgen retains much of his German cultural identity. Already as a young teenager, he was influenced by more anti-authoritarian and 'liberal', democratic approaches. As a result of these formative influences and also due to continuous reflection of what he does as a teacher, he has a rather democratic understanding of learning and teaching. He is very much aware of his teacher power and uncomfortable with the power asymmetry in the classroom. As a result, he tries to reduce the power asymmetry between his students and him and to use his teacher power to the benefit of the students (see Brookfield et al., 2022). Hence, Jürgen has arrived at a laissez-faire approach to students' turning on their cameras. A partial exception to that approach is during student presentations where he shares with the students that it is a good practice to have their cameras on, though he still accepts it if they remain off.

We are in full agreement that it is not the teacher's role to police the students. We are aware of other teachers who in an authoritarian or charming way require that students' cameras are on during attendance-taking and then (quietly or not) hope that cameras will not be switched off. Jürgen does not believe in roll calls as they remind him of military practices (that in his view, have no place in education) and as he believes that he and his students can do more interesting things with their limited time. He can simply check the attendance by looking at the list of participants that are logged in.

Jürgen is also wary of the kind of surveillance that is omnipresent in the panopticon. The idea of the panopticon goes back to Jeremy Bentham's creation of an 'ideal prison' that featured a central tower with cells surrounding the tower in a backlit circle, an arrangement that allowed a central supervisor located in the tower to observe each and every one of the prisoners in their cells. In *Discipline and punish. The birth of the prison*, the French philosopher and historian Michel Foucault (1995) developed the concept of the panopticon further into a general model that illustrates the effect of disciplinary technology in everyday life. In its various forms, the panopticon serves to treat patients, to instruct students, to confine the insane and to supervise workers (Foucault, 1995). Due to the panopticon, prisoners/patients/schoolchildren/workers become complicit in their own domination: they behave as if they are constantly under surveillance and consequently conform their behaviour to the norm. The panopticon's modalities have been greatly enhanced in the past decades by the advent of the world wide web and social media, leading to an age of surveillance capitalism (Zuboff, 2019). Stephen Brookfield has discussed the metaphor of the panopticon in the context of higher education (see e.g. Brookfield et al., 2019, 2022). For instance, what is wrong with a participant lying on the floor and closing their eyes, if it helps them to listen closely to a lecture segment – especially online, while escaping the panoptic gaze?

Anecdotal evidence shows that students in Singapore (and other Asian countries) are usually reluctant to turn on their cameras during synchronous online classes, and few undergraduate students like to turn on their microphone and speak to the whole class. This does not necessarily mean that students are passive in a one-way banking model of education (where students are containers into which

educators pour their knowledge: Freire, 1993). The 'everyone' chats on Blackboard Collaborate and Zoom have been very active in our classes (and the digitally native students also chat with each other during class privately, especially when they are working on a group assignment).

There are many reasons for students' reluctance to turn on their cameras and use their microphones: poor Internet connectivity/bandwidth issues (this can be a problem for students even in high-bandwidth Singapore, and it is especially a problem for students in other countries, like for instance in China, Indonesia and Burma); an inconvenient physical location (for instance, a crowded study space, with family members in the same room – this could be framed as a social class issue); being 'shy' (a cultural issue); preferring to be in very casual attire and thus 'less presentable' (also in terms of personal grooming); and preferring to 'multi-task' while attending class; not turning on the microphone may be due to the microphone not working or a noisy environment (see Harvey, 2020; Moses, 2020; Terada, 2021).

The relative non-use of students' cameras and microphones in an online environment amplifies the problem of student engagement and the question how we can be sure that students appreciate the content discussed during class. To some extent, interactive lecturing (Barkley & Major, 2018) is the answer. In an Asian, largely Confucian context, asking students questions does not always elicit many answers. A lack of preparation and also the Asian culture of not wanting to 'lose face' (Bodycott & Walker, 2000) by saying something inaccurate oftentimes leads to a relative lack of participation in class. Repeated exhortations by the lecturer to participate could lead to antagonizing at least some of the students.

Students may be shy to turn on their microphones – especially initially and at the lower levels of higher education – this can be completely different in Masters courses, where participants often have a wealth of experience and expert knowledge that they are happy to share. Be this as it may, students are often fast in responding by using the chat box and to write text messages. There is a tendency that the responses are given by the same handful of students. Whilst there is no doubt that those interactive students grasp at least the gist of the content, it is unclear what is going in with the rest of the class? To what extent is the silent majority able to accomplish the intended learning outcomes?

This is where student response tools and interactive student engagement platforms (e.g. Kahoot, Mentimeter, Nearpod and Quizizz) are worthwhile exploring. Whilst Alfred was exposed to them during a recent course that he underwent – the Advanced Certificate in Learning & Performance (ACLP) programme by Singapore's Institute of Adult Learning (IAL) – Jürgen used his journey of becoming a Fellow of the Higher Education Academy (UK) as an opportunity to further experiment with student response systems. Jürgen is thankful to Alfred for introducing him to Quizizz and patiently teaching him how to use it well. We have found Quizizz to be an excellent student response system because it is user-friendly and free of charge. Especially for multiple choice questions (MCQs), it is the best platform that we know of.

Technophobes might argue that the participation that is achieved through tools like Quizizz can also be achieved by lower-tech means. Such an argument is not entirely ludicrous. Indeed, one can print out mock tests for students in a face-to-face environment or email them a file (or make the mock test available as a linked google doc). This is indeed what Jürgen, who would describe himself as neither technophobic nor technophiliac, used to do. In addition, Jürgen still intersperses his PowerPoint slide decks with questions – that can take the form of MCQs, but also more open-ended questions. While these are all valid pedagogical methods, tools like Quizizz add elements of fun (at least as perceived by many of our students) and gamification, as we shall see.

The vast majority of our students are digital natives, with technology being an integral part of their lives. Consequently, there is an opportunity to engage participants via Web 2.0 technologies that are perceived as engaging and motivating, and Gokbulut (2020, p. 108) goes as far as deeming it unreasonable to educate students "away from technology in traditional classrooms using traditional methods". Contemporary learners "need active, collaborative and technology-rich learning environments" (Gokbulut, 2020, p. 108). This is also where the gamification element of Quizziz comes into play, allowing learners to gain knowledge by leveraging entertainment and weaving it within learning environments (Bawa, 2019). There is evidence that game-based learning can improve engagement, motivation and achievement, and this kind of gamification can be used as a formative assessment tool (Bawa, 2019; Göksün & Gürsoy, 2019).

An introduction to the main features of Quizizz

A freely-available, basic Quizizz account provides adequate features with several quiz formats to choose from (see Figure 1). It can support up to 100 participants for live quiz sessions, and a leader board is available for screen-sharing after the quiz has been completed by the students.

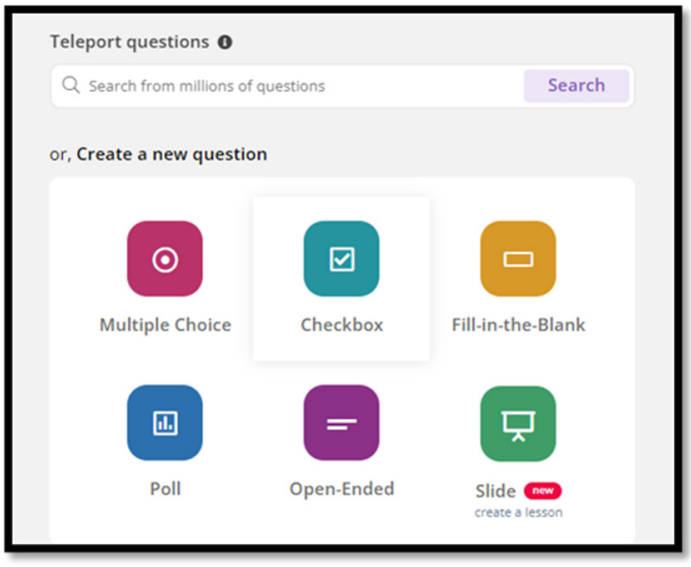

Figure 1: Modalities available in Quizizz.

A main objective for using an online tool such as Quizizz is to monitor students' level of understanding of the module content. Amongst other features, Quizizz offers a detailed analysis of students' scores. It provides the participants' average score, participants' score charts in leader board style (see Figure 2), time taken to answer each question and problematic questions which confuse students (see Figure 3). This information allows the lecturer to monitor their progress across each topic and enables them to render targeted help for students who are struggling with the quizzes. Quizizz allows educators to test students' knowledge and understanding of a topical segment. Students who are informed beforehand of an impending quiz, are more likely to pay attention during class, so they could do well in the quiz after class.

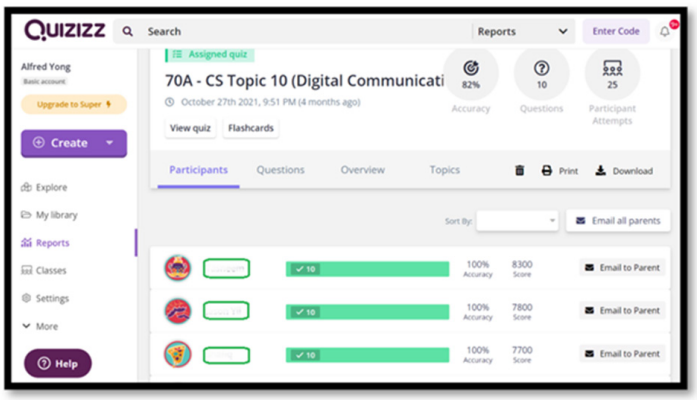

Figure 2. An example of a Quizizz leader board.

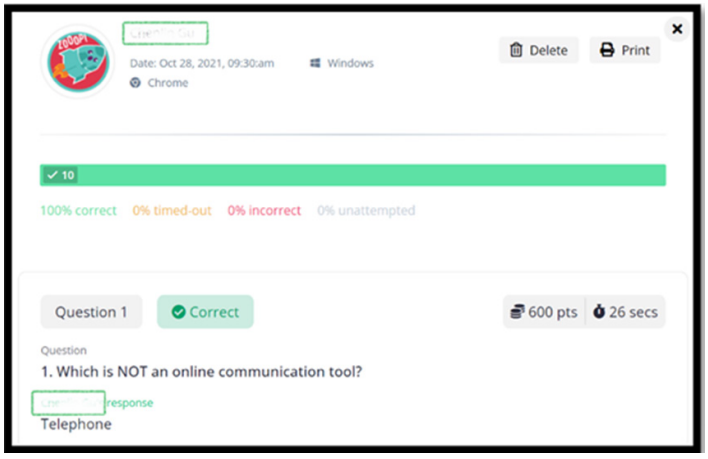

Figure 3. An example of an analysis of an individual question for each student within Quizizz.

A big plus of Quizizz is that it is free to access, both for students and the teacher. It supports the creation of assessments for any topic and provides various reporting formats to shed light on students' understanding and the questions they struggled with. The report feature in Quizizz allows educators to further clarify certain difficult concepts in subsequent lessons and to rethink learning and teaching strategies for future delivery (see Figure 4).

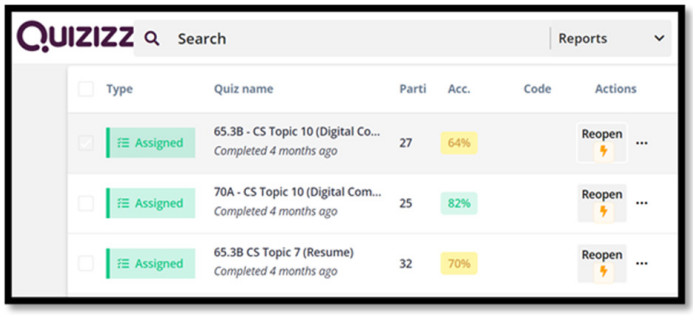

Figure 4. Past reports of quiz results.

When Quizizz is used frequently, educators could collect data and make comparisons across topics taught to different cohorts. These data, stored in the Quizizz reports, give a breakdown of individual students' scores and results are downloadable in Excel format. Interventions can be arranged for students who had low scores for several topics. Educators can choose to encourage students to join Quizizz by using their first name before attempting a quiz. Some students who are ill-prepared for the quiz and thus compelled to make wild guesses are usually reluctant to disclose their identity. It is debatable whether educators should playfully read out the pseudonyms found on the leader board (see Figure 2).

Creating a Quizizz account is simple and free. It can be done via an existing Google or Microsoft account. Once logged in, select "Create", "New quiz" and you will receive pop-up boxes to guide you in setting up an account. Next, tag the quiz to a subject (see Figure 5).

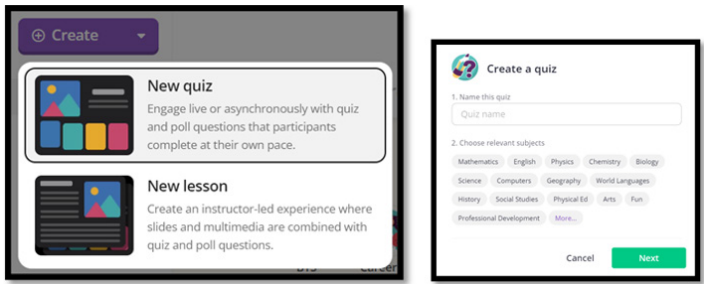

Figure 5. Create a quiz and tag it to a subject.

You could design your questionnaire by selecting from the six quiz formats available (see Figure 1). It is a strength of Quizizz that a different question format can be selected for each question. We have found the MCQ format particularly useful.

The crafting of multiple choice questions (MCQs) is a topic that goes beyond the confines of our article. MCQs have the advantage that they can test a broad range of content. But they are also associated with 'shallow learning', as in the real world, answers are usually not right or wrong, but oftentimes in a grey area. Thus, it would be ill-advised to have too many MCQ assessments, as they do not foster critical thinking and it is important to be able to argue for one's opinions and positions (Chandratilake et al., 2011).

Within Quizizz, each multiple choice question allows for a maximum of five choices. A green tick in the top right corner of one of the choices indicates the correct answer (see the red arrow pointing to the green tick in Figure 6). Whilst MCQs usually have only one correct answer (this is in our view a major issue with MCQs), Quizizz allows for the selection of "more than one correct answer" (in the jargon of quantitative research, this type of crafting questions is called a 'checklist'; see Figure 6).

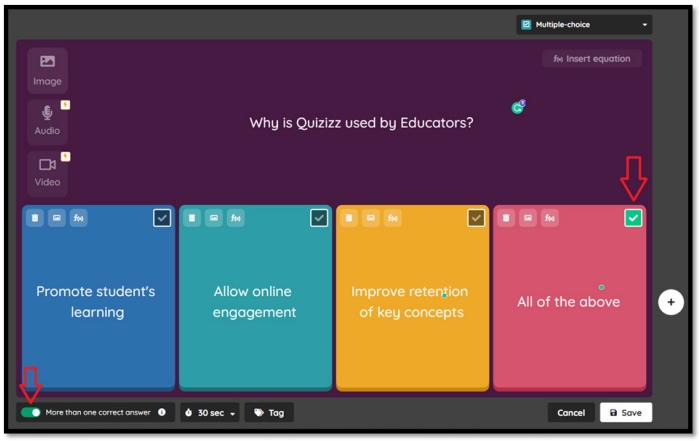

Figure 6: Inputting question and answers.

It is possible to add images to aesthetically enhance the questions and possibly add an element of fun (see Figure 7). Your choices can have images, too. Once you are satisfied with a question, click 'save'.

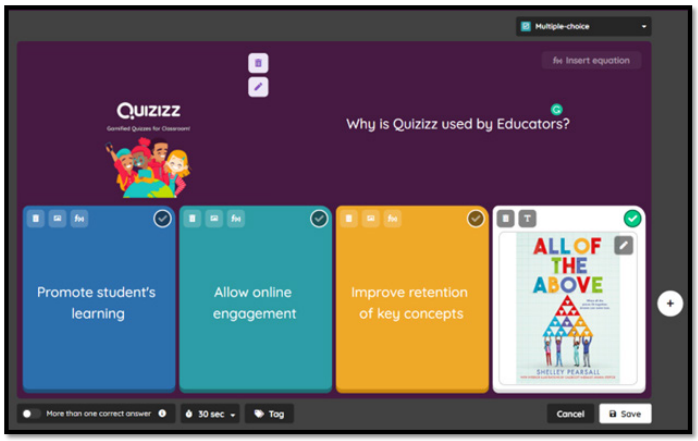

Figure 7. Adding images to question and answers.

With reference to Figure 8, the next window brings you back to the main page where you can add your second question. After all the choices are added, click on the "save button" at the top-right corner (see Figure 8).

You will be prompted to add an image for this set of questions and tag it to one language (e.g. English) and one 'grade' (e.g. University). Then select "Public, visible to everyone", so your students can participate in your quiz.

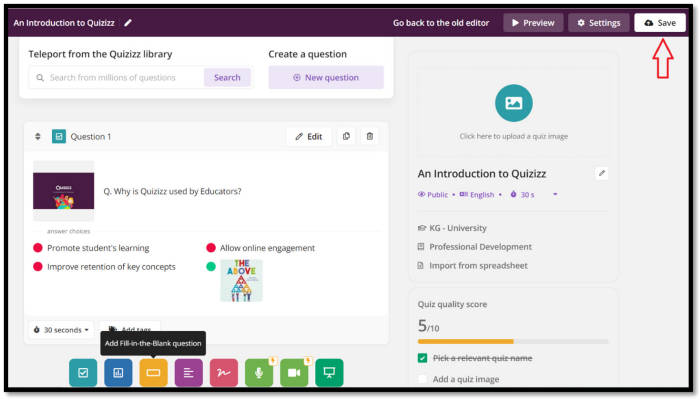

Figure 8. Main view of all your questions.

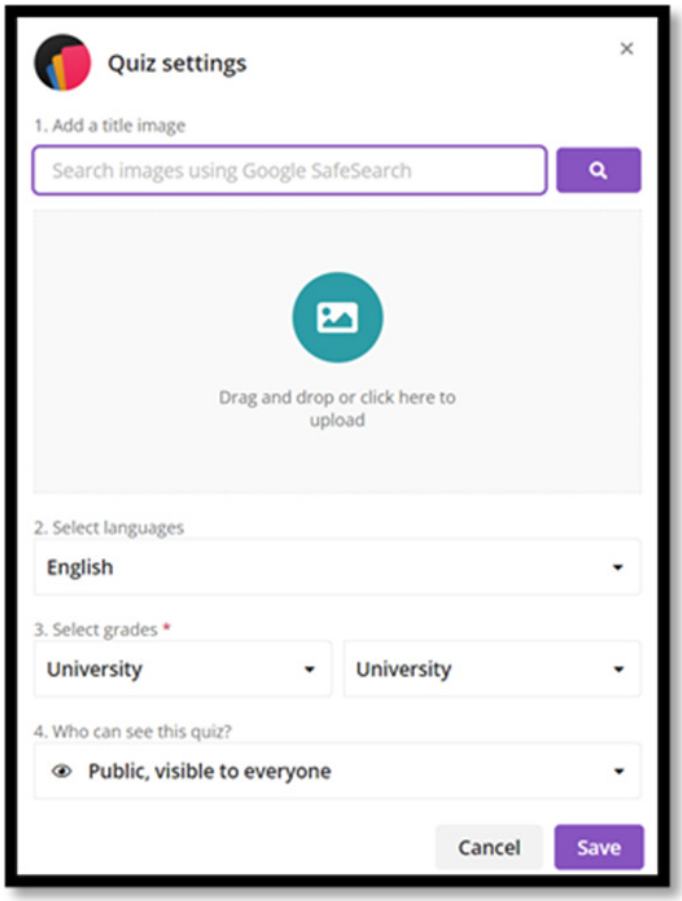

Figure 9. Quiz settings.

After saving the quiz, you have two options to conduct the quiz: "start a live quiz" or "assign homework". Starting a live quiz enables students to join a live session where students progress at their pace ("classic"). Alternatively, the instructor controls the pace. The "assign homework" option will enable you to assign the quiz as a homework where students could attempt it multiple times over a certain period of time (for instance, during the next two weeks: see Figure 10).

Our preference is to "assign homework" and at the same time to conduct the quiz live with students during the online session. You select "assign homework" and input the quiz duration. There are some options to select (e.g. show leader board, shuffle questions), so take your time to go through them (see Figure 11). So-called "power-ups" are but one

of the gamification elements. They are single-use abilities designed to increase engagement and participation and they come, for instance, in the following forms: "double jeopardy" (get double points for a correct answer or lose all points if you choose the wrong answer), "x2" (get twice the points for answering correctly), "50-50" (half of the incorrect options are eliminated), "eraser" (one wrong option is eliminated), "immunity" (two attempts are allowed for answering the same question), "time freeze" (timer is frozen to allow players to answer one question), and "power play" (all players in the quiz get 50% more points in 20 seconds). Click on "assign" when done.

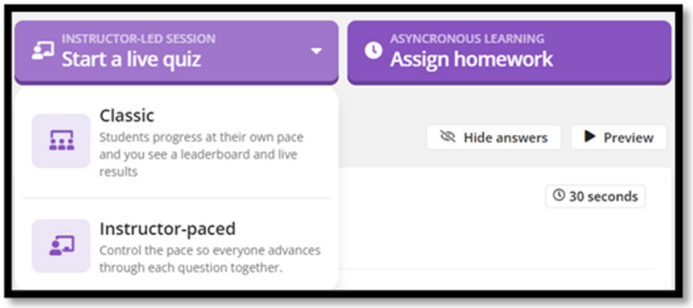

Figure 10. Quiz delivery modes.

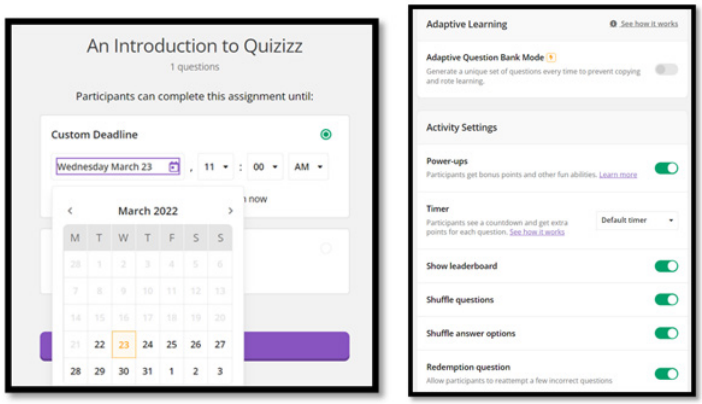

Figure 11. Quiz duration and settings.

There are several ways to conduct a quiz. We recommend to copy the link and paste it into the chat box (so that students can just click on it) and into the lecture slides which you are using for the session (see Figure 12). Alternatively, at the start of your lecture, you could retrieve the quiz from Reports, after having logged in (see Figure 13). Select the correct quiz and it will show the number of participants who joined it.

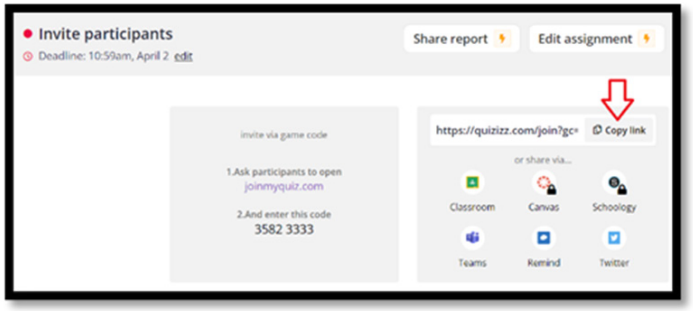

Figure 12. Copy quiz link.

Figure 13. Retrieve a quiz from Reports.

One possibility is to give students ten minutes to complete ten MCQs after a lecture segment. Jürgen likes to conduct several no-stakes, formative quizzes especially for modules where a significant percentage of the overall assessment weightage consists of online MCQ tests. In such cases, Quizizz helps prepare for the summative online tests.

The instructor copies the Quizizz link and shares it in a chat box (e.g. in Zoom or Blackboard Collaborate). A simple click on the link enables students to input their names and begin the quiz. They attempt the quiz live for the next ten minutes at their own pace, while the instructor may choose to monitor how many participants have signed in and completed all MCQs (see Figure 2).

After the time is up or when all are done – whichever is earlier – we recommend for the instructor to go through the correct answers with students by screen-sharing the questions and answers and expelling possible misconceptions and misinterpretations associated with the wrong choices. Knowing the overall performance per question enables the instructor to place more emphasis on questions which many students answered wrongly (see Figure 14).

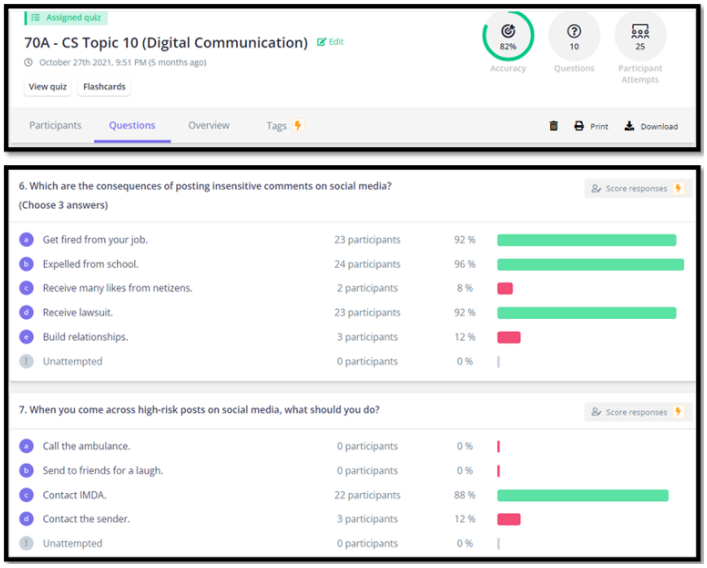

Figure 14. Screen-sharing of correct answers for discussion purposes.

The instructor can choose to show the leader board after the quiz, for instance to highlight students who scored 70% and above. Alfred recognises these students for their laudable efforts and congratulates them. He does not share the leader board for students who scored below 70%.

Students have provided fairly unanimous positive feedback that they enjoy Quizizz quizzes. For instance, Jürgen has conducted polls where he gave participants yes-or-no choices whether they like Quizizz and depending on the class, he has received 100% positive responses or close to that. Alfred observed that students felt a sense of achievement when they had done well and their names were mentioned. Students typically describe Quizizz as fun and meaningful as the quiz enhances their understanding and improves their knowledge of the tested content. Jürgen uses Stephen Brookfield's Critical Incident Questionnaire, a one-page, five-question response sheet that students are requested to fill in anonymously during the last five minutes of class (Brookfield, 2013, 2016, 2017) at the end of most of his classes. Students' responses to the questions "at what moment in class did you feel most engaged with what was happening?" and "what action that anyone (teacher or student) took did you find most affirming or helpful?" usually make prominent reference to the positive experiences with the Quizizz quizzes if and when he conducts them.

As an aside, one of Alfred's students amused him by asking if the results would be shared to parents because he saw this option available in the leader board (see Figure 15). This is one option provided by Quizizz that is less useful in the context of higher education.

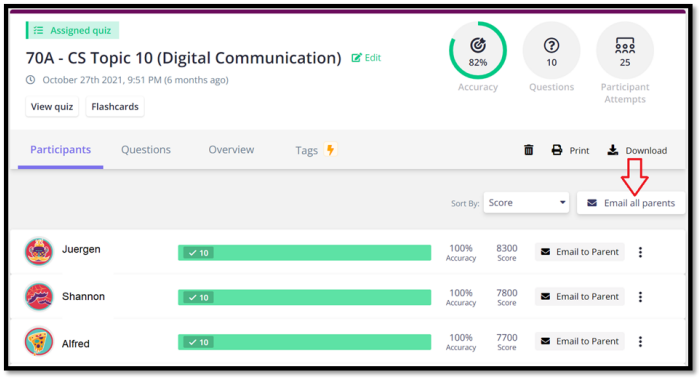

Figure 15. Option to email to parents.

Accessing Quizizz is easy and is possible even if bandwidth is suboptimal. We have had students from a variety of East and Southeast Asian countries (Singapore, Malaysia, Indonesia, Vietnam, Burma, China and South Korea) successfully participate in Quizizz quizzes for the past year. Some students might be reluctant to take part as they may not feel confident about the topic or they may have been distracted during the session. When doing Quizizz for the first time, it may be useful to carefully explain how it works, to conduct a quick poll whether it works for everybody, wait till everybody is on board and to encourage participants that this kind of interactive activity will help them prepare for assessments. In the unlikely event that somebody faces insurmountable technical problems with the Quizizz platform, it can also be considered to provide the questions differently as a fallback, for instance as a google doc or in PowerPoint form.

A comparison between Quizizz and Kahoot

There are a large number of online tools to consider for setting up a virtual quiz. As many of our readers are aware, Kahoot has become a household name for gamified learning. There are studies that arrive at the conclusion that Kahoot is preferable to Quizizz. For instance, Chaiyo and Nokham's (2017) study of Thai nursing students compared Kahoot, Quizizz and Google Forms in terms of students' concentration, engagement, enjoyment, perceived learning, motivation, and satisfaction. Kahoot did marginally better than Quizizz in the Thai students' perception, with both gamified student response systems significantly outperforming Google Forms (Chaiyo & Nokham, 2017).

The study by Göksün and Gürsoy (2019) also arrives at results that favour Kahoot. The authors compared success and engagement in gamified learning experiences via Kahoot and Quizizz. Their experimental research of pre-service teachers in Turkey came to the result that

> "the impact of Kahoot-based instructional activities on academic achievement and student engagement was higher when compared to that of the control group. On the other hand, the educational activities that were conducted with Quizizz were less effective when compared to the control group. Limited visual feedback capacity of the Quizizz application, the fact that the questions progressed at an individual pace and the individual technological problems experienced by the participants may have prevented academic achievement and student engagement as demonstrated by the qualitative findings" (Göksün & Gürsoy, 2019, p. 26).

Nonetheless, Göksün and Gürsoy (2019) observed that students liked both Kahoot and Quizizz in the classroom and, concurring with Bury (2017), attributed that as being due to students' preferring strong stimuli or receiving immediate feedback on their test performance (Göksün & Gürsoy, 2019).

However, our own anecdotal evidence and other research (Basuki & Hidayati, 2019) show that Quizizz has certain advantages over Kahoot. Amongst other things, the free version of Quizizz allows for more questions than Kahoot. Also, there are no character limitations for Quizizz, whereas for Kahoot a question cannot exceed 95 characters and an answer can have maximally 60 characters (Göksün & Gürsoy, 2019). Perhaps most importantly, Quizizz has impressive features in their free version, whereas that of Kahoot only has very basic ones. Kahoot's type of quiz format is limited to "Quiz" and "True or False" (see Figure 16). To open additional quiz formats, a fee is required. The free version of Kahoot allows for only up to ten players. The next membership tier (Home) allows for up to 20 players. For educators with more than 50 students, the "Max Plan" is the only option. Finally, the music that comes with Kahoot can be perceived as childish or overly dramatic and thus stressful and distracting – of course, it can be muted.

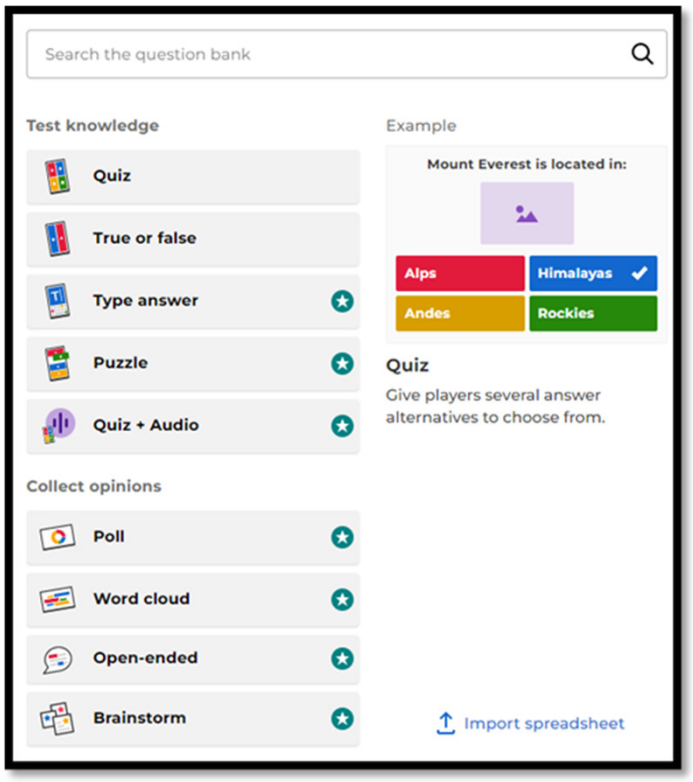

Figure 16. The limited quiz options for a basic Kahoot account.

Conclusion

To us, technology is a mere medium, enabler and tool (Kefalaki et al., 2022). In order to avoid 'death by PowerPoint', a variety of learning activities may stimulate students by doing interesting activities that can occasionally come with gamification elements. In Quizizz, students can see how well they did and they can compare themselves with other students; there is also a countdown element which we advise them to not focus on. Using, for instance, only Mentimeter could become as boringly repetitive as always using PowerPoint. Hence the use of a wide variety of technology – such as, for instance, Quizizz, Padlet, polls, the Blackboard Collaborate-integrated whiteboard and showing the occasional video clip – as well as different teaching & learning approaches (interactive lecture, discussion, brainstorming, Q&A, MCQs, Critical Incident Questionnaire) address heterogeneous learning styles and enable a varied learning experience.

In conclusion, we are fans of Quizizz because of four aspects: (1) it is free of charge for teachers and students; (2) it offers great features, especially for setting MCQs; (3) it is easy to use; and (4) our students enjoy Quizizz and it appears to have improved their test performances. Quizizz quizzes provide a formative assessment opportunity as well as useful feedback on students' knowledge. When MCQs get answered largely correctly, these questions require less discussion and explanation. However, those where students struggle provide an opportunity to explain the rationale for the correct answer in more detail.

If you have any trouble with experimenting with Quizizz, we hope that the introductory description in the third section of our article will be helpful to you. If all else fails, you may wish to consider asking one of your millennial students for help and they may be able to explain everything with great ease. After all, many of them are digital natives.

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