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Student feedback on the use of gamification for teaching pathology postgraduates

Gamification is a relatively recent approach to medical education which seeks to use the inherent addictive nature of online gaming positively. For a long time, online games have been discredited due to their addictive nature and sometimes offensive content. Kahoot! is an online quiz-based learning platform with over 70 million users worldwide. It allows teachers to create quizzes with a character limit of 120 characters. The students are supposed to respond to the questions within the time limit set by the teacher. The application then evaluates the responses and displays the leaderboard after every question. The final scores and the top three contestants are displayed at the end of the quiz.[1]

The contestants can attempt the quiz again on their own devices and improve their scores. The key features that make this quizzing game interesting are instantaneous results, an interactive interface, and the fact that the quizzes are available on the app for all contestants to practise later.[1]

According to Aktekin *et al.*, the benefits of Kahoot-based closure program (after each anatomy lecture) are increased attendance and participation, and more attentive and enthusiastic students in the class.[2] Felszeghy *et al.* used a Kahoot gamification program for teaching histology to medical and dental students and concluded that the learning process and participant satisfaction can be significantly improved by introducing Kahoot-based gamification programs in histology courses.[3] Other similar quiz-based gaming applications available are Socrative, Doctor's Dilemma, Quizizz, Quiz maker, Lesson up, Quizlet, and Canvas. 'Ghost mode' on Kahoot allows students to compete against their first attempt to improve their time.

Our study was conducted in May–June 2020 after enrolling first-, second- and third-year pathology postgraduate students of a tertiary care hospital in northern India. This research complies with the guidelines for human research and was conducted in accordance with the Declaration of Helsinki of World Medical Association. Informed consent was taken from the study participants and subject confidentiality was maintained.

A total of 24 of 30 postgraduate students participated voluntarily. The students were asked to download the application 'Kahoot' and 'GoToWebinar' on the same or different devices. The quiz was accessible on smartphones, tablets or personal computers and was hosted at a specified time once a week. A webinar link was provided to the students on the day of the quiz. The game pin was shared with the students by screen sharing on GoToWebinar. Each quiz consisted of 15 multiple-choice questions with four options each and one correct answer (Figs 1a and b). Only 20 seconds were allowed per question. The application awarded points to the contestants based on their accuracy and promptness in answering. The top five positions based on cumulative scores were displayed after every question and the top three contestants at the end of the quiz (Figs 1c and d). Each quiz was followed by a discussion, which was hosted on GoToWebinar with emphasis on difficult questions, i.e. with the most incorrect answers (which was also calculated in the application automatically).

Due to Covid-19-related duties, it was difficult for the students to attend all the five weekly quizzes. Despite this 15 students were able to attend four or more quizzes and only 3 attended two or less.

Fig 1a and b. Examples of questions asked during the online quiz on Kahoot!

TABLE I. Responses of students to the utility of the online quiz

Question	Likert scale responses				
	0	1	2	3	4
Did the online quiz help to cope with lockdown stress?	30.4%	43.5%	26.1%	na	na
Did the quiz interfere with your daily routine?	78.3%	21.7%	0	na	na
How often did you use the Kahoot practice mode to improve your score after the quiz?	Never: 17.4%	Only once: 52.2%	More than once: 30.4%	na	na
On a scale of 0 to 4 how much did gamification enhance your retention of the knowledge?	0	0	43.5%	39.1%	17.4%

na not available

FIG 1c. An example of the final ranking of students with their
scores summarized by Kahoot! at the end of the quiz

FIG 1d. An example of a podium displayed at the end of the quiz
with rankings

After five sessions, the students were asked to fill an online
feedback form. Twenty-three of 24 students responded to the
questionnaire. All the students (23/23) found the online quiz useful
(Table I).

The intervention was well-received by the students. However,
during the study, some problems associated with the use of Kahoot!
came to light. There was a tendency to guess among the students due
to the time limit imposed and extra credits for fast responders. There
was also a fear of being exposed as a low scorer due to peer pressure.
Since the group consisted of students of different batches there was
always a fear of being outperformed by a junior student.

Gamification cannot be for everyone and it needs to be handled with
care by medical teachers. Quizzing requires an element of guesswork,
hence it is important to recognize that while it is nice to encourage
competition by quizzes, one should not give the impression that
guessing is being encouraged. The students also need to know that the
purpose of using a quiz in the classroom, whether online or offline, is
to have a lively atmosphere.

A big hurdle to the virtual or online teaching model is the incon-
sistent availability of fast-speed internet at all locations. However,
the situation is improving with better 4G penetration in small towns
and tier-2 cities. The time allotted to the students for each question
needs to be thoughtfully addressed. If it is too long, the students can
google the question and find the answer and if it is too short, they
are likely to get frustrated. More complex questions requiring
analytical skills cannot be asked on Kahoot! and similar quizzing
platforms.[4]

Conflict of interest. None declared

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Monoclonal gammopathy of unknown significance: Implications of Indian baseline data

Monoclonal gammopathy of unknown significance (MGUS) is one of
the commonest asymptomatic pre-malignant conditions seen in the
population, characterized by the presence of a monoclonal protein in
the blood without any end-organ damage such as hypercalcaemia, renal
injury, anaemia or bony lesions.[1] The International Myeloma Working
Group (IMWG) provides criteria for diagnosis of MGUS, stating that
the quantity of the monoclonal protein should be <3 g/dl, with <10%
plasma cells in the bone marrow. In addition, there should not be any
myeloma defining event, with urinary monoclonal protein <500 mg/
dl.[1] It is well known that MGUS consistently precedes the onset of
symptomatic myeloma.[2] The prevalence of MGUS is estimated at
approximately 3% of the population >50 years of age, based on data
from western countries.[3]