SHORT COMMUNICATION

To assess students' perception about Kahoot! as an innovative learning tool in oral pathology- a qualitative study

Mehwish Feroz Ali[1], Gulrukh Askary[2], Hasan Mehdi[3], Aiman Khan[4], Hibba Kaukab[5], Rida Qamar[6]

Abstract

This qualitative study was conducted to investigate the perception of third-year dental students' about Kahoot! as an innovative learning, teaching, and assessment tool for the subject of Oral Pathology at the Fatima Jinnah Dental College, Karachi. This online App was implemented as a teaching and assessment tool in both the first and second semesters during the academic year 2019. Out of 75 students, 50 were females and 25 were males. Students' opinion about Kahoot! was assessed using a questionnaire with a 5-point Likert scale. Kahoot! has been implemented for the first time in the dental curriculum of our institution. Around 90% of the students accepted that they can easily comprehend the knowledge, challenge their mental ability, and become an attentive learner. The quizzes assisted students to identify different oral structures, histological features, and oral mucosal alteration in an interesting way. According to students' opinion, Kahoot! assist them to develop a notion of self-directed learning (69; 92%), and prepared to attempt exams confidently (68; 90%).

Keywords: Online Learning, self-assessment, Internet based intervention.

DOI: https://doi.org/10.47391/JPMA.01-194

Introduction

Currently, educators are engaged with the learners of the 21st century, who are bringing in an era of technology, and innovation.[1] The aim of the dental educationist is to critically engage students in the learning process and apply in the real setting. Similarly, dental educators also face the tedious task of delivering vast content in a limited timeframe. As a consequence, the integration, self-directed learning, learner's attention span, and satisfaction elements are overlooked.[2] To overcome this, a dental educator must involve students in an active learning process for coherent understanding, analytical thinking, and build connections between content and enactment.[3]

Students take a keen interest in the learning process which challenges their mental abilities and enhances expertise.[4] Kahoot! An e-Learning tool helps health professional educators to engage students in an effective learning process and create a fun-based learning environment.[5] This is a blend of theory with an exciting way of assessing the knowledge that can be referred to as "learn with fun".[6] Kahoot! can be integrated into the curriculum at different professional years or used in combination with varied teaching techniques, such as flipped classroom, small group discussion, large group discussion, etc.[7]

Kahoot! can also be implemented as a pre- or post-diagnostic tool for any topic to assess students' prior knowledge.[6] It can be employed for ongoing formative assessment to keep a vigilant eye on students' progress and improvise their academic record gradually.[8] Sumanasekera et al stated that students found Kahoot! a dynamic learning tool and effective in comprehending the pharmacology literature measured by their good quality exam performance.[9] Similarly, Felszeghy et al suggested that if technology-based approaches are used to teach histology to medical and dental students, they will remain more connected and take interest in the subject as compared to the conventional "chalk and talk" method.[10]

This study was conducted to investigate the dental students' perception of implementation of Kahoot! as an innovative learning-teaching tool for Oral Pathology. We also assessed whether it has proved to be an effective educational tool to make students eager to learn, ensure their academic satisfaction, obtain thorough understanding, achieve learning outcomes, and develop a sound interest in the subject.

Methods and Results

Qualitative research was carried out among the third-year dental students of Oral Pathology at the Fatima Jinnah Dental College and Hospital (FJDC&H), Karachi. Kahoot! was implemented as a teaching and assessment tool in the first and second semesters of the academic year 2019. A sample size of 75 participants was calculated through Raosoft.com[11] (Raosoft.com. 2016. Sample Size Calculator. [online]) at a 5% margin of error, 95% confidence interval, 90% study population, and 50% saturation. The study was conducted in the academic year of nine months from

[1,2,4-6]Department of Oral Pathology, Fatima Jinnah Dental College and Hospital (FJDC&H), Karachi, Pakistan; [3]Department of Oral Surgery, Fatima Jinnah Dental College and Hospital (FJDC&H), Karachi, Pakistan.
Correspondence: Mehwish Feroz Ali. e-mail: mgalmani@live.com

Table-1: Students' responses on different elements of learning.

Components	Likert-Scale Criteria [n (%)]					
	Strongly Agree	Agree	Partially Agree	Disagree	Strongly Disagree	*p*-value
Content understanding	45 (60)	21 (28)	9 (12)	0 (0)	0 (0)	1.00
Achievement of learning objectives	48 (64)	19 (25)	6 (8)	2 (2.7)	0 (0)	0.915
Comprehension of learning	39 (52)	29 (38)	7 (9)	0 (0)	0 (0)	0.625
Effectiveness of teaching strategy	52 (69.3)	21 (28)	2 (2.7)	0 (0)	0 (0%)	0.878
Easy to perform	52(69.3)	16(21.3)	3(4)	4(5.3)	0 (0)	0.618
Encourage to read content	49 (65.3)	24 (32)	2 (2.7)	0 (0)	0 (0)	0.453
Engaging and interesting	57 (76)	18 (24)	0 (0)	0 (0)	0 (0)	1.00
Well-planned and timely managed	58 (77.3)	17 (22.7)	0 (0)	0 (0)	0 (0)	0.848
Encourages self-directed learning	52 (69.3)	17 (22.7)	6 (8)	0 (0)	0 (0)	0.899
Overall experience	58 (77.3)	17 (22.7)	0 (0)	0 (0)	0 (0)	0.701

One-way ANOVA was applied to analyse different variables. *p*-value was statistically insignificant.

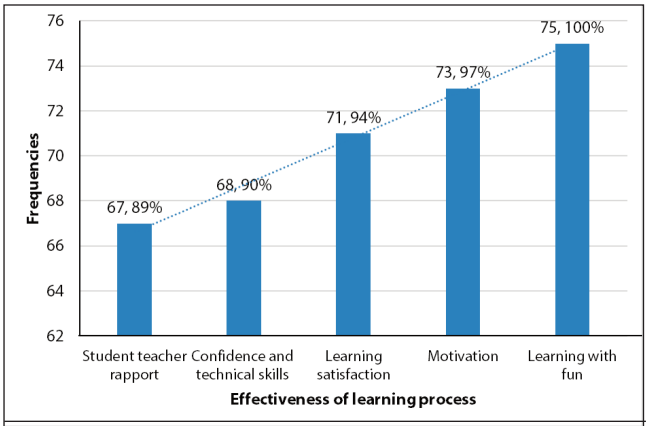

Figure: Opinion of students about the effectiveness of learning process.

Table-2: Qualitative feedback of Batch 25 (2019) students.

Qualitative feedback of Kahoot!-based learning
1. Fun and interactive app
2. Engaging and competitive activity which helped us to differentiate normal and abnormal anatomical oral structures.
3. It's not boring like lectures
4. Develops a keen interest in the subject of oral pathology
5. Afterward discussion assist in-depth understanding of the oral diseases
6. Revising what we have already learned
7. Sometimes it's a distraction as I only focus on winning
8. Enables me to improve MCQ solving skills
9. It made me a self-directed learner so I prove myself to be the best in the quizzes.
10. Effective only when we have sound knowledge, need to be attentive in lectures.
11. Kahoot! captures everyone's attention straight away
12. I am an introvert student but started participating willingly in the tutorials.

January to September 2019. Purposive sampling was applied. Ethical approval was taken from the institutional Ethical Review Board (Ref # JAN-2019-OPL01). The study was announced and its rationale explained to every student at the start of the academic session. Verbal consent was obtained from all the students. Those who were irregular and not willing to participate in the study were excluded.

Kahoot! was implemented multiple times in the oral pathology course, especially in the module of oral cancer, white keratotic lesions, salivary gland diseases and tumours, odontogenic tumours, jaw cysts, and bone disorders. It also aids to assess students' performance on the respective topics, in 30 minutes duration. Students played Kahoot! using their smart-phones in the session to gain and comprehend knowledge. At the end of each semester, students' opinion about Kahoot! was assessed using an online questionnaire with a 5-point Likert-type scale. The questionnaire consisted of 15 closed-ended questions and one open-ended (Structural coherence). The scale was selected due to the most representative and appropriate items to address the objective of this work. Face-to-face verbal feedback was also obtained from the participants to compare the outcomes. The verbal feedback was carried out by the moderator who was not part of the team to avoid interviewer-bias, though the moderator was trained for this task.

The data was analysed by the Statistical Package for Social Sciences (SPSS version 20). For qualitative and quantitative data percentage, frequencies, means, and SD were calculated. One way Anova was applied to compare the different variables and $p<0.05$ was considered as significant. Bar-Graphs were also constructed to show the obtained results in percentages. Internal validity was assured using data and analyst triangulation.

A total of 75 students participated in the study, out of which 50 (66.7%) were females and 25 (33.3) were males. Participants' age ranged from 20 to 22 years. Table-1 and figure show the feedback of the students on varied learning elements. Kahoot! has been implemented for the first time in the dental curriculum in our institution, with positive responses from the majority of students. Sixty-eight (90%) students accepted that Kahoot!-based learning helped them to comprehend and retain the knowledge, challenged their mental ability, and developed interest in Oral Pathology as a subject.

In the past, whenever oral pathology small group discussions were conducted the students were either able to retain it partially or not at all. It was becoming very difficult for educators to keep pace with the curriculum. After implementing the Kahoot! activity, students were self-motivated and came prepared in the sessions (73; 97.3%).

It stimulated a notion of self-directed learning (69; 92%), and prepared for exams (68; 90.6%) in order to secure satisfaction (71; 94.6%) and good grades in the quizzes. They developed a sound rapport with the facilitators (67; 89.3%) and with peers (64; 85.3%).

Table-2 represents students' qualitative feedback on Kahoot! application for Oral Pathology. They were able to differentiate between the normal structures of oral mucosa and the variations. The discussion of each question by the peers and facilitator assist in acquiring an in-depth understanding of oral diseases. Choosing a correct option develops their MCQ solving skills. The strategy was so interesting for the students that they developed a keen interest in the Oral Pathology course.

In this study, students willingly participated in the Kahoot!-based assessment in comparison to the written tests. Those students who had been securing below-average grades in the former tests gave their best performance in the Kahoot! assessment and worked hard to improve their progress. Their good results in the continuous assessment test (CATs) and other in-house exams during the academic year were observed. The CATs were executed bimonthly, and a total of four CATs were conducted throughout the academic year. The results showed gradual improvement —CAT 1 (59%), CAT 2 (72%), CAT 3 (87%), and CAT 4 (91%). Mid-term (79%), pre-professional exam (81%), and professional exam 2019 (100%) also demonstrated good results and achievements. It may be suggested that Kahoot! can be used as an effective learning tool for strengthening, and practicing the content for securing good grades in the exams.

Conclusion

Kahoot! provides a cooperative learning environment and ensures friendly competition among students and keeps them self-motivated and connected to their studies. Kahoot! performed in teams encourages peer-to-peer interaction and productive learning. Individual tasks help them to analyse their knowledge and identify the gaps in the learning process. Learners received a constructive feedback from the facilitator to help them to develop a sound understanding of the topic. The most appealing part was that even introverts, and students with average performance became engaged and performed extremely well in the quizzes. Our overall experience of using this online tool for the subject of Oral Pathology was interesting, attention-grabbing and prolific. Kahoot! and other e-learning Apps should be used in health sciences to provide an active learning environment for the learners.

Disclaimer: I hereby declare that this article is my own original work and has not been submitted before to any institution for assessment purposes. Further, I have acknowledged all sources used and have cited these in the reference section.

Conflict of interest: The person who signed the ethical review statement is also a co-author of the same manuscript.

Funding disclosure: None

References

1. Wang AI, Tahir R. The effect of using Kahoot! for learning —A literature review. Comput Educ. 2020; 149: 103818.
2. de Oliveira MLB, Verner FS, Kamburogğlu K, Silva JNN, Junqueira RB. Effectiveness of Using a Mobile App to Improve Dental Students' Ability to Identify Endodontic Complications from Periapical Radiographs. J Dent Educ 2019; 83: 1092-99.
3. Jones SM, Katyal P, Xie X, Nicolas MP, Leung EM, Noland DM, et al. A 'KAHOOT!' Approach: The Effectiveness of Game-Based Learning for an Advanced Placement Biology Class. Stimul. Gaming 2019; 50: 832-847.
4. Plump CM, LaRosa J. Using Kahoot! In the Classroom to Create Engagement and Active Learning: A Game-Based Technology Solution for eLearning Novices. Manag Teach Rev 2017; 2: 1-8.
5. Kuo CL, Chuang YH. Kahoot!: Applications and Effects in Education. Hu Li Za Zhi 2018; 65: 13-9.
6. Ismail MAA, Mohammad JAM. Kahoot!: a promising tool for formative assessment in medical education. Edu Med J 2017; 9: 19–26.
7. Johnson S, Purkiss J, Holaday L, Selvig D, Hortsch M. Learning histology -dental and medical students' study strategies. Eur J Dent Educ 2015; 19: 65–73.
8. Licorish SA, George JL, Owen HE, Daniel B. students' perception of Kahoot!'s influence on teaching and learning. Research and Practice in Technology Enhanced Learning 2018; 13: 755–64.
9. Sumanasekera W, Turner C, Ly K, Hoang P, Jent T, Sumanasekera T. Evaluation of multiple active learning strategies in a pharmacology course. Curr Pharm Teach Learn 2020; 12: 88-94.
10. Felszeghy S, Pasonen-Seppänen S, Koskela A, Nieminen P, Härkönen K, Paldanius KMA, et al. Using online game-based platforms to improve student performance and engagement in histology teaching. BMC Med Educ 2019; 19: 273.
11. Sample size calculator. [Online] [Cited 2021 May 20]. Available from: URL: http://www.raosoft.com/samplesize.html.