

Digital Game-Based Learning (DGBL) Through Kahoot: A Learner-Centric Approach in Nursing Education - Systematic Review

Mini Simon M¹, Nisha C K², Tripti K Srivastava³

¹Department of Health Profession Education, Dutta Meghe Institute of Medical Sciences, Nagpur

²Department of Psychiatry Nursing, St Johns College of Nursing, Bangalore,

³Dept of Health Profession Education, Dutta Meghe Institute of Medical Sciences, Nagpur, India.

Corresponding Author: Mini Simon M

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ABSTRACT

Introduction: The teaching-learning activities in nursing have changed tremendously in the post-COVID-19 situation around the world. The learning style of Z generation students demands a technologically sound and sprightly chosen method of evaluation. Digital Game-based learning is one of the components of the Learning Management System which figures a great level of student motivation and participation in interactive learning which incorporates different teaching styles. Kahoot! Is a Game-Based Learning platform used to review students' knowledge, for formative assessment, or as a break from traditional classroom activities?

Objective: To explore the teaching and learning experiences of nursing students using the Kahoot!.app.

Methodology: A comprehensive search of MEDLINE, EMBASE, Web of Knowledge, Cochrane Central Register of Controlled Trials, PsycINFO, and CINAHL from 2013 to April 2022 was conducted. Qualitative and quantitative studies, Randomized controlled trials (RCTs), and systematic reviews in the English language were only included in the search. The reviewer searched, screened, assessed study quality, and extracted data. Literature search strategies and article retrieval was guided by -Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA). Meta-analysis was not considered valid due to the heterogeneity of identified populations, interventions, comparisons, and

outcomes; hence a narrative synthesis is presented.

Results: A total of 10 research articles published in peer-reviewed journals were included in this study. Three synthesized findings were generated from the categories:

(i) Kahoot is implemented as a teaching and assessment tool in nursing. (ii) Acknowledging as a source of motivation for learners. (iii) Encourages the learners to reflect on their strengths and weakness as an "assessment for learning tool". (iv) Through digital-based games students understand complex concepts, promote critical thinking, and acquire decision-making skills. However, there is one study that shows no significant effect in the interventional group.

Conclusion: Kahoot assists to create a dynamic learning environment and enhances the long-term retention of information. Gaming makes a positive impact on the teaching/learning process. The nursing curriculum can be fortified with a robust method of learner-centric methods like digital-based gamification-Kahoot, to cater to the learning needs of digital natives of present nursing students.

Keywords: [Learner-centric Approach, Kahoot, Digital Game-Based Learning, Gamification, Nursing Education, formative assessment, Assessment for Learning]

INTRODUCTION

The advancements in technology have enabled the health professionals to extract the maximum benefit of it and helped the

world education scenario to introduce change in health care, especially in post COVID Era. Teaching-learning activities are an integral part of professional nursing courses. The teaching methods and evaluation methods emphasised the learning styles of students and enhance the outcome of education. The learning styles of students have changed in the 21st century and the nursing educators are incisive about the learning style of Z-generation students. As a learner-centric approach brings out timely and constructive feedback to students about their learning process, Digital Game-Based Learning is one of the strategies that can be adopted in nursing education. Gamification promotes the nursing instructors to use technology and gaming aptly to stimulate the interest of students in the subject.^[1] The educational games are molded by self-determination theory and social cognitive theory. ^[2] Critical thinking and decision-making skills are promoted through game-based learning which prepares the students to be competitive and efficient in their profession.^[3] Kahoot is a fun-based e-learning platform that enables health education professionals to teach their students dynamically and effectively.^[4] Through Kahoot, individuals can distinguish their learning process through peer-to-peer interaction and also constructive feedback from the facilitator^[5]. It facilitates continual learning, and can be used as a tool for "assessment for learning".^[6] The review aims to investigate the learning experience of nursing students through Kahoot.

MATERIALS & METHODS

Design: A systematic review of quantitative and qualitative studies was carried out.

Search methods: A comprehensive search of MEDLINE, EMBASE, Web of Knowledge, Cochrane Central Register of Controlled Trials, PsycINFO, and CINAHL from 2013 to April 2022 was conducted. Qualitative and quantitative studies, Randomized controlled trials (RCTs), and systematic reviews in the English language were only included in the search. The reviewers searched, screened, assessed study quality, and abstracted the data.

Inclusion criteria

- Randomized Control Trials (RCTs), pre-test/post-test design, and systematic reviews included in the search.
- Focused on teaching-learning activities related to nursing.

Exclusion criteria

- Reports of computer-based individual learning.
- Studies related to Post Graduate education/ Registered Nurses (RN).
- Studies other than the English language.

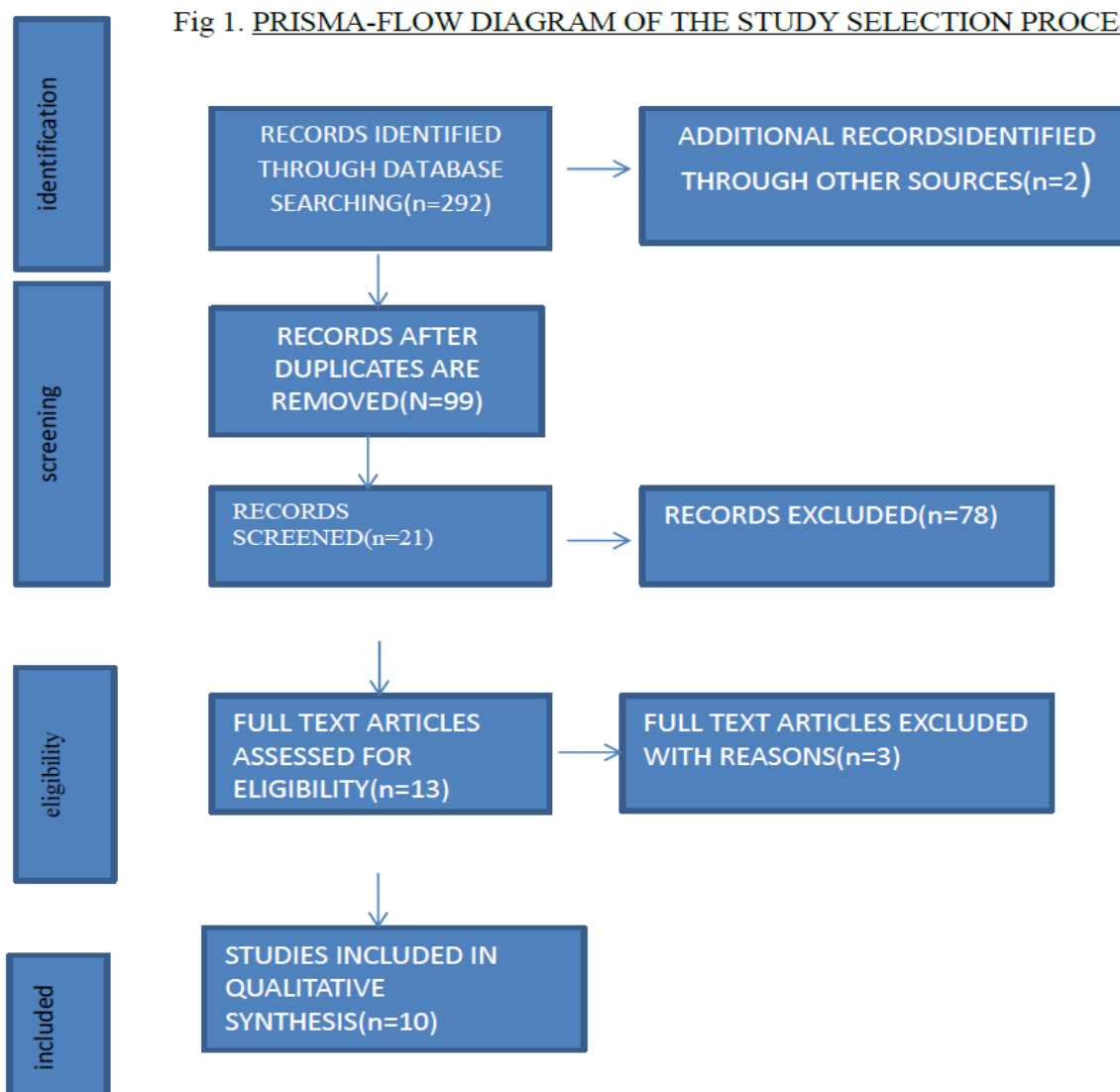
Literature search strategies and article retrieval was guided by -Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA). Meta-analysis was not deemed appropriate due to the heterogeneity of populations, interventions, comparisons, and outcomes, and a narrative synthesis is presented.

Table.1 SUMMARY OF SYNTHESIS OF ACCEPTED ARTICLES

Sl.no	Title of article	Type of study& place	Findings	Reference
1	Impact of educational games on academic outcomes of students in the Degree in Nursing	Prospective, Quasi-Experimental, Spain	- Kahoot! Promotes knowledge acquisition and comprehension. It also promotes teacher-student interaction (p<0.05).	Castro MJ (2019)
2	Comparison of the effect of reinforcement with question-answer and Kahoot method on the success and motivation levels of nursing students	Quasi-Experimental, Turkey	-No method was superior	Aras GN (2021)
3	Gaming Strategies in Nursing Education	Quasi-experimental, Philadelphia	-The Kahoot! group had higher test scores in the final examination (t = 2.90, p = .005)	Kinder FD (2018)

4	The first-year nursing students' evaluation of Kahoot! to facilitate learning and testing knowledge.	Observational cross-sectional study, Ireland and Italy	-66.19%students found Kahoot! easy to use, helpful for learning especially concerning formative assessment	Coveney K (2022)
5	The effects of web-based education and Kahoot usage in the evaluation of the knowledge and skills regarding intramuscular injection among nursing students	the semi-experimental study, Turkey	The Kahoot! group had significantly higher mean scores in knowledge scores and skill performance for intramuscular injection.	Öz GÖ(2021)
6	Using the "Kahoot.it a Game to Enhance Undergraduate Nursing Students' Learning	Prospective, Quasi-Experimental, Philadelphia.	Independent t-test showed that the Kahoot! group had higher test scores. (t=2.90, df= 97 p=.005) (2- tailed) than the control group.	Jane M. Kurz (2017)
7	Digital Game-Based Learning: A Didactic Experience in the Pre-Degree Nursing Career	Formative evaluation of 4000 nursing students, Chile	Kahoot is a digital tool that allows formative evaluations, Fostering the teaching-learning process, increasing the participation and motivation of students during their training	Solís de Ovando, (2018)
8	Instructional Gaming: Using Kahoot! for Review	Cross-sectional study, USA	Students (100%) communicated that the Kahoot! the review was fun, interactive, and kept them engaged in the classroom. Kahoot! have the potential to innovate, accelerate, enrich and deepen skills, and motivate and engage students.	Indra. H (2020)
9	Feasibility of Kahoot! As a real-time assessment Tool in pathology classroom teaching	Pre-test/post-test design, Austria	Kahoot provides an excellent learning environment and keeps the students self-motivated including introverts.	Neureiter D (2020)
10	To assess students' perception of Kahoot! is an innovative learning tool in pathology- a qualitative study	Qualitative research -face to face verbal feedback, Karachi	Students (90%) accepted that Kahoot helped them to comprehend and retain knowledge	Ali MF, (2021)

Fig 1. PRISMA-FLOW DIAGRAM OF THE STUDY SELECTION PROCESS



RESULT

There were 10 articles available that studied the effectiveness of Digital Game-Based Learning (DGBL) through kahoot. There were seven studies were conducted as quasi experimental study (n=7) and two cross-sectional study (n=2). There was a qualitative study on the perception of students on kahoot. The studies were from Austria (n=1), Spain (n=1), Turkey (n=2), Philadelphia (n=3), Karachi (n=1), Chile (n=1), Italy (n=1), none of the studies are from India. the reviewers identified that one study each in 2022, 2019, 2017 whereas three studies in 2021, two studies in 2020 & 2018 were published.

DISCUSSION

Research question: Does the digital game - Kahoot enhance teaching-learning activities among undergraduate nursing students?

Out of 10 identified articles, 9 reported that Kahoot is effective in teaching-learning activities.

The main findings are discussed below:

i. Kahoot is implemented as a teaching and assessment tool in nursing.

A teacher-made assessment is possible by careful preparation of the quiz, polls, and multiple-choice questions. It provides an opportunity to reinforce the learning. Unlike other teaching methods, Kahoot would enable the learners to give immediate feedback^[6] and promote learning. This tool enables the students to comprehend and retain the knowledge, and develop an interest in the subjects^{[5][8]}.

ii. Kahoot brings motivation for learners.

The sessions are planned in such a way that students get scores immediately and their names are displayed on the board motivating them to go to the further task. The group activities and active participation with peer groups^[4,6] make the students enjoy "learning with joy with the support of audio-visual stimuli." This competitiveness

and^[7] socialization among students leads to strengthening professional socialization which indirectly promotes professional value acquisition.

iii. Encourages the learners to reflect on their strengths and weakness as an "assessment for learning tool".

A stress-free environment is available for learners with the components of edutainment. The faculty can interact with the students and facilitate teacher feedback. The formative assessment enables the faculty as well as the learners through tutorials, problem-based learning activities, etc.^[6]

iv. Digital Games enable learners to understand complex concepts, promote critical thinking, and acquire decision-making skills.

In Kahoot, the learners can be actively involved in the teaching sessions, and clarify their doubts then and there. Based on the complexity of the question and the level of students, questions and time for response can be altered by the faculty^[4,6,16]. The nursing students need to apply their problem-solving skills and critical thinking skill acquired through this Digital Game-Based Learning is a pivotal role to enhance professionalism in their clinical practice.^[11] Nursing is rooted in pragmatism and skill-like administration of Intra Muscular (IM) injection. Through the review of the responses of learners and constructive feedback^[13,14,16,17] from peer groups and the faculty, Kahoot is also promising a chance to develop skills that are essential to an efficient professional nurse.^[17]

CONCLUSION

The review reveals that there is a paucity of research available on digital game-based learning through Kahoot. Available research articles show that this strategy is effective in nursing education. The researchers need to focus on the effectiveness of this approach as multiple cohort studies with control and experimental groups. The qualitative studies on the same will provide the effects of

digital-based gaming in nursing education. Planning and implementing the Kahoot teaching-learning activities enables the nurse educators and students to promote the educational objectives effectively, as a formative learning tool.

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REFERENCES

1. Murad SS. Brain involvement in the use of games in nursing education. *Journal of Nursing Education and Practice*. 2017;7(6):90.
2. Boctor L. Active-learning strategies: The use of a game to reinforce learning in nursing education. A case study. *Nurse education in practice*. 2013 Mar 1;13(2):96-100.
3. Gudadappanavar AM, Benni JM, Javali SB. Effectiveness of the game-based learning over traditional teaching-learning strategy to instruct pharmacology for Phase II medical students. *Journal of Education and Health Promotion*. 2021;10.
4. Ismail MA, Mohammad JA. Kahoot: A promising tool for formative assessment in medical education. *Education in medicine journal*. 2017 Apr 1;9(2).
5. Ali MF, Askary G, Mehdi H, Khan A, Kaukab H, Qamar R. To assess students' perception about Kahoot! as an innovative learning tool in oral pathology-a qualitative study. *Journal of the Pakistan Medical Association*. 2021 Jul 26;71(10):2426.
6. Ismail MA, Ahmad A, Mohammad JA, Fakri NM, Nor MZ, Pa MN. Using Kahoot! as a formative assessment tool in medical education: a phenomenological study. *BMC medical education*. 2019 Dec;19(1):1-8.
7. Castro MJ, López M, Cao MJ, Fernández-Castro M, García S, Frutos M, Jiménez JM. Impact of educational games on academic outcomes of students in the Degree in Nursing. *PloS one*. 2019 Jul 29;14(7): e0220388.
8. Kinder FD, Kurz JM. Gaming strategies in nursing education. *Teaching and Learning in Nursing*. 2018 Oct 1;13(4):212-4.
9. Chaiyo Y, Nokham R. The effect of Kahoot, Quizizz and Google Forms on the student's perception in the classrooms response system. In 2017 International Conference on Digital Arts, Media and Technology (ICDAMT) 2017 Mar 1 (pp. 178-182). IEEE.
10. Narnaware R, Neumeier M. Short-term Physiological Knowledge Retention in Nursing Students. *The FASEB Journal*. 2020 Apr 1;34(S1):1-1.
11. Coveney K, Somanadhan S, Nicholson E, Piga S, Pizziconi V, D'Elpidio G, Gazzelloni A. First-year nursing students' evaluation of Kahoot! to facilitate learning and testing knowledge. A pilot study in Ireland and Italy. *Teaching and Learning in Nursing*. 2022 Jan 5.
12. Öz GÖ, Ordu Y. The effects of web-based education and Kahoot usage in evaluation of the knowledge and skills regarding intramuscular injection among nursing students. *Nurse Education Today*. 2021 Aug 1; 103:104910.
13. Aras GN, Çiftçi B. Comparison of the effect of reinforcement with question-answer and Kahoot method on the success and motivation levels of nursing students: A quasi-experimental review. *Nurse Education Today*. 2021 Jul 1; 102:104930
14. Solís de Ovando A, Rodríguez A, Hullin C. Digital Game-Based Learning: A Didactic Experience in the Pre-Degree Nursing Career. *Stud Health Technol Inform*. 2018; 250:88
15. Neureiter D, Klieser E, Neumayer B, Winkelmann P, Urbas R, Kiesslich T. Feasibility of Kahoot! as a Real-Time Assessment Tool in (Histo-)pathology Classroom Teaching. *Adv Med Educ Pract*. 2020 Oct 5; 11:695-705.
16. Wang AI, Tahir R. The effect of using Kahoot! for learning—A literature review. *Computers & Education*. 2020 May 1; 149:103818.
17. Hershorin I. Instructional Gaming: Using Kahoot! for review. *Nursing Education*

Research Conference 2020: Transforming Nursing Education Through Evidence Generation and Translation;2020 Washington, DC, USA. Available from <http://hdl.handle.net/10755/20127>.

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