

Effect of Using Kahoot Game as Web-Based Assessment Tool for Telenursing Educational Program on Nursing Students' Academic Engagement

Hasnaa Saleh Elsayed¹, Gehan Mohamed Ahmed², Salwa Ibrahim Mahmoud³ and Shaimaa Mohamed Araby⁴

(1) Assistant lecturer of Nursing Administration, Faculty of Nursing, Benha University

(2) Professor of Nursing Administration, Faculty of Nursing, Helwan University

(3) professor of Nursing Administration, Faculty of Nursing, Benha University

(4) Assistant professor of Nursing Administration, Faculty of Nursing, Benha University

Abstract

Background: Kahoot game is an innovative educational and evaluative tool which an effective supplement to increase nursing students' academic engagement by turning assessments into competitive activities, active participation, enhance motivation and support diverse learning styles, making it. **Aim:** The study aims to determine the effect of using Kahoot game as web-based assessment tool for telenursing educational program on nursing students' academic engagement. **Research design:** Quasi experimental research design with pre and posttest was utilized. **Setting:** This study was conducted at Faculty of Nursing, Benha University. **Subjects:** Included a simple random sample of (68) fourth year nursing students. **Tools of data collection:** Three tools were used to collect data; Telenursing Knowledge Questionnaire, Kahoot Game Performance Questionnaire and Academic Engagement Questionnaire. **Results:** The results showed that, the majority (86.8%) of nursing students had good knowledge level regarding telenursing at post program phase compared to (4.4%) in the preprogram phase, the most (92.6%) of them had satisfactory performance level regarding kahoot game in post program phase compared to (44.1%) in the pre-program phase and the majority (88.2%) of them had high academic engagement level in post program phase compared to (66.2%) in the preprogram phase. **Conclusion:** There was a significant positive improvement in nursing students' knowledge regarding telenursing and kahoot game performance (knowledge-attitude- skills) and their academic engagement post program implementation. **Recommendations:** Integrate kahoot game into the nursing curriculum as a formative assessment tool for enhancing students' engagement in lectures.

Keywords: Academic engagement, Kahoot game, Nursing students, Telenursing, Web based assessment tool

Introduction:

In current digital landscape, nursing students' lives are profoundly shaped by constant interaction with digital materials. These are the nursing students who have grown up in the digital world and see it as their preferred destination. In response, educators persistently seek innovative approaches to enhance educational practices (Degirmencioglu & Gilanlioglu, 2023).

Educational innovation in the 21st century is growing rapidly so that learning evaluation activities are also developed by utilizing technology. The use of technology based evaluation tools can have a positive impact increasing student enthusiasm for learning and facilitate to group student values quickly and precisely by teachers. Therefore, the use of technology-based evaluation tools

needs to be applied in universities (**Fauzi, et al., 2022**).

Kahoot is one of the digital game-based learning platforms for students and teachers to carry out a fun learning process. Kahoot is an acceptable student response tool for organizing quizzes, and facilitating survey. (**Mat Husin & Azmuddin, 2022**).

Regarding how to access the application, the first step is logging in with an existing account, or sign up for creating the new one. after the login or sign-up session, click “Create” button at the top of the page. To add a question text, it can be access with “Click to Start Typing Question”. Then add the answers, and select the correct or appropriate answer, save the progress by clicking the “Save” button in upper right corner of the page. Finally, to start the activity, first go to library in the dashboard. Then click “Start” button on the existing activity to start it (**Kurniawan et al., 2024**).

Nursing students will play crucial roles as essential practical personnel, which calls for enriching knowledge and skills about modern technology in the field of healthcare, especially tele-nursing (**Marco-Franco, et al., 2023**). Telenursing is the use of telecommunications and information technology to provide nursing practice remotely and includes a large number of communication technologies such as the Internet, email, and telephone (**Rad, et al., 2023**).

Keeping up students' participation and engagement can be troublesome the teaching methods can be teacher-centered. As a result, students are becoming to be progressively bored and involved in off-task conduct. As the digital generation enjoys using mobile applications. Therefore, the use of online tools as a learning and evaluating instrument as Kahoot game is built to support students' cognitive and motivational viewpoints and to

enhance students' academic engagement (**Rosalina, et al., 2023**).

Academic engagement is a cognitive-affective-behavioral state of satisfaction and motivation that aids students to achieve success in their studies and deal with academic challenges. In addition, some studies indicate that it is an essential variable in school dropout, because it drives the student towards learning, as well as a moderating factor of stress, anxiety and depression (**Martínez, et al., 2024**).

Significance of the study:

Formative assessment is particularly designed to provide performance feedback, to improve and hasten learning. The information technology advancement has given rise to novel approaches as kahoot game which allows teachers to create a variety of game-based activities in which students compete against one another which foster students' engagement and motivation (**Utami, 2023**).

Telenursing has become the new reality in studying nursing because nursing students contribute to the development of healthcare in the general practice setting. Education of nursing students has a significant impact on their knowledge, opinion, and awareness of future work. (**Abd Ellatif, et al., 2023**).

From the researchers work area, found that the traditional methods of formative assessment that used during lectures not effective enough to have students' feedback from the learning. Also, telenursing is a new field in nursing administration so students don't have enough knowledge about it. So that this study will be conducted to determine the effect of using Kahoot game as web-based assessment tool for telenursing educational program on nursing students' academic engagement.

Aim of the study:

This study aimed to determine the effect of

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using Kahoot game as web-based assessment tool for telenursing educational program on nursing students' academic engagement.

Research Hypotheses

After implementation of Kahoot game as web-based assessment tool for telenursing educational program, nursing students' knowledge regarding telenursing and their performance (knowledge- attitude- skills) regarding Kahoot game will be improved and also nursing students' academic engagement will be enhanced.

Subjects and methods

Research design:

Quasi experimental research design with pre and posttest was used to achieve the aim of the present study.

Study setting:

The current study was conducted at Faculty of Nursing, Benha University. The Faculty of Nursing was established in 1992. There are six academic departments in the Faculty including: Medical - Surgical Nursing, Obstetrics and Gynecological Nursing, Pediatric Nursing, Community Health Nursing, Nursing Administration and Psychiatric Nursing Mental Health.

Study subjects:

The subjects of the present study were a simple random sample of (68) fourth year nursing students out from (612) nursing students who were enrolled in the nursing administration course. All selected students owned smart mobile devices and were registered in the second term of the academic year 2023–2024, at the Faculty of Nursing, Benha University. The sample size was calculated via the Cochran formula;

$$n = \frac{N \cdot p(1 - p)}{(N - 1) \cdot \frac{B^2}{Z^2} + p(1 - p)}$$

Tools for Data Collection: Three tools were used for data collection

Tool (1): Telenursing Knowledge Questionnaire A questionnaire developed by the researchers based on review of related literature (Craig Sorkin, 2021; Amoke, et al., 2022; Harada, et al., 2022). It was included two parts:

Part (1): Personal data: It consisted of personal data about nursing students; (age, gender, marital status and residence).

Part (2): Knowledge test: It consisted of (30) multiple choice questions to assess nursing students' knowledge about telenursing.

Scoring system:

The studied nursing students' answers were scored as; "1" correct answer, and "0" incorrect answer and the total knowledge score was ranged from (0-30). The level of knowledge was categorized as the following; Good knowledge level if the percentage score was $\geq 75\%$ which equal ≥ 23 scores. Average knowledge level if the percentage score was $60 - < 75\%$ which ranged from $18 - < 23$ scores. Poor knowledge level if the percentage score was $< 60\%$ which equal < 18 scores. (Coutinho et al., 2016).

Tool (2): Kahoot Game Performance Questionnaire Part It was developed by the researchers based on review of related literatures (Rashed, et al., 2022, Daryanti, 2022; Mat Husin, & Azmuddin, 2022; Nuri, et al., 2022; and Topu, 2023;). It consisted of (68) items divided into three parts (Knowledge test- Attitude questionnaire – Skills self-report questionnaire):

Part (1): Knowledge Test: It consisted of (20) multiple choice questions to assess nursing students' knowledge about Kahoot game.

Scoring system:

The answers were scored as; "1" correct answer, and "0" incorrect answer and the total knowledge score was ranged from (0-20). The level of knowledge was categorized as the following; Good knowledge level if the percentage score was $\geq 75\%$ which equal ≥ 15 scores. Average knowledge level if the percentage score was $60 - < 75\%$ which ranged from $12 - < 15$ scores. Poor knowledge level if the percentage score was $< 60\%$ which equal < 12 scores (Coutinho et al., 2016).

Part (2): Attitude Questionnaire: It included 29 items to assess nursing students' attitude about Kahoot game. Divided into 3 dimensions distributed as follows; Usefulness of Kahoot game in learning (13 items), Ease of using Kahoot game (6 items) and finally Enjoyment and motivation from Kahoot game (10 items).

Scoring system:

The scoring system was calculated according to a three-point Likert scale ranges from: Agree (3 points), uncertain (2 points) and disagree (1 point). The total attitude score was ranged from (29-87). The levels of attitude was determined as the following: Positive attitude regard kahoot game if the percentage score was $\geq 60\%$ which equal ≥ 52 scores). Negative attitude regard kahoot game if the percentage score was $< 60\%$ which equal < 52 scores) (Kruse et al., 2022).

Part (3): Skills self-report Questionnaire: It included 19 items to assess nursing students' skills about Kahoot game. Divided into 2 dimensions distributed as follows; General technological skills (5 items) and Specific Kahoot game skills (14 items).

Scoring system:

The scoring system was calculated according to a three-point Likert scale ranges from: Always (3 points), sometimes (2 points) and never (1 point). The total skills score was ranged from (19-57). The level of skills was

determined as the following: Satisfactory Kahoot skills if the percentage score was $\geq 60\%$ which equal ≥ 34 scores). Unsatisfactory Kahoot skills if the percentage score was $< 60\%$ which equal < 34 scores) (Guerrero et al., 2022).

Tool (3): Academic Engagement Questionnaire

It was developed by the researchers based on review of related literatures (Wahyuni, & Eftita, 2023; Omar, et al., 2023 & Sobhy et al., 2024). It included 31 items to assess nursing students' academic engagement. Divided into 4 dimensions distributed as follows; Behavioral engagement (9 items), Cognitive engagement (10 items), Active and collaborative learning (7 items) and Interaction between students and faculty teaching staff members (5 items).

Scoring system:

The responses were scored on a three points Liker Scale as follows; Always (3 points), sometimes (2 points) and never (1 point). Total academic engagement score was ranged from (31-93). The level of academic engagement was determined as the following: High academic engagement level: if the percentage score was $> 75\%$ of total scores which equal > 67 scores). Moderate academic engagement level: if the percentage score was $60 - 75\%$ of total scores ranged from (56-67 scores). Low academic engagement level: if the percentage score was $< 60\%$ of total scores which equal < 56 scores) (Irvine, 2020).

Ethical consideration:

Prior to the conduction of the study, ethical approval was obtained from the Scientific Research Ethical Committee at Faculty of Nursing, Benha University with research code (REC-NA-D 1). The researchers explained the nature and aim of the study to fourth year nursing students and informed that participation in the study is voluntary. Oral consent was obtained from each student in the study. Nursing students were informed that the

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obtained data were be used for the study purpose only and the right to withdraw from the study at any time with no consequences was ascertained.

Official approval:

A written official approval was obtained from the vice dean of students and education affairs, head of nursing administration department of Faculty of Nursing, Benha University through official letter explaining the aim of the study to request permission to conduct the study.

A- Preparatory phase:

This phase took five months (from the beginning of August 2023 to the end of December 2023) included the following; the researchers reviewed the available national and international related literatures concerning the topic of the study was done using text books, articles, journals and thesis and the researchers developed tools of nursing student knowledge questionnaire regarding telenursing, kahoot performance questionnaire (knowledge-attitude- skills) and academic engagement questionnaire.

Tools validity:

This phase took one month (January 2024). The tools of study were tested for validity through distribution of the tools to a jury of five experts from the field of Nursing Administration and Nursing Education consisting of two professors and two assistant professors of Nursing Administration from Tanta, Benha and Ain shams Universities and one assistant professor of Nursing Education from Cairo University). Modifications of jury were done such as modify some words to give the right meaning for the phrase which were not clear e.g (Which type of questions is typically used in kahoot game) became (Which type of questions is free to use in kahoot game), (Enter PIN code) became (Enter postal index number (PIN) code).

Pilot study:

Pilot study took first week of February (2024) to assess tools clarity, applicability and to estimate the time needed for collection of each tool. It was done on (7) fourth academic year nursing students representing 10% of study subjects.

Reliability of tools: The study tools were tested for internal consistency using Cronbach's Alpha coefficient. Telenursing knowledge questionnaire was **0.961**, Kahoot performance questionnaire was **0.967**, Academic engagement questionnaire was **0.951**.

Field work:

I- Assessment phase:

Assessment phase took last 3 weeks (from second week of February 2024) to assess fourth year nursing student's knowledge regarding telenursing, nursing student performance toward Kahoot game and their academic engagement at preprogram.

At the beginning, the researchers held meetings with nursing students to clarify and explain the nature and aim of the study, methods of teaching, media and method of evaluation and time of the educational program to ensure maximum cooperation from the nursing students.

WhatsApp group was made and all nursing students were added to it.

The researchers collected tools electronically by links done via Google forms; Telenursing Knowledge Questionnaire <https://forms.gle/dWLGcEQnj2uMnmYQ7> Kahoot Performance Questionnaire (knowledge – attitude – Skills) <https://forms.gle/ztG8CtbQMRiQYrYi6> - academic engagement Questionnaire <https://forms.gle/6zD8uufnaxQLT3zB6>. Then

the links were sent to nursing students via WhatsApp group. The time required for filling telenursing knowledge questionnaire was around (7-10) minutes, Kahoot performance questionnaire was around (15-20) and academic engagement questionnaire was around (10-15) minutes. Data was collected daily and the average number of responses per day ranged between (3-4) responses from nursing students.

II- Planning phase:

This phase took one month (March, 2024) and included the development of telenursing program content and Kahoot game quizzes.

Telenursing educational program using Kahoot game as web based assessment tool was developed by the researchers. Educational program consisted of six different topics. Time table for teaching telenursing educational program content was done. Methods of teaching, media and methods of evaluation were selected to suit the nursing students' needs and achieve the objectives the educational program

Power point presentations of the lectures, handout was prepared and quizzes by using kahoot game designed and created by the researchers.

III- Implementation phase:

This phase took (from the beginning of April, 2024 to the middle of May 2024). The educational program implemented in (6) sessions. Each session was taken (2 hrs.), one day per week. Study subjects were divided into 3 subgroups as following (two subgroups each of them consisted of 22 students and one subgroup consisted of 24 nursing students) each session was taken for each subgroup in different times when students free according to schedule of teaching plan of practical nursing administration course (from 9Am to 11Am and

from 11Am to 1Pm). The total time of sessions were (12 hrs.) implemented in six weeks at Faculty computer lab with internet access point.

The researchers began each session with the rules of managing session. Students were given the option of downloading the application of Kahoot to students' mobile device or using it online. The researchers gave a lecture content to students as scheduled in the program and then the kahoot game was applied at the end of each session.

The researchers launched kahoot game in the browser on the large screen by using data show device. After kahoot was opened, the system automatically assigned it a unique PIN and students were asked to open kahoot application and join as player and enter the unique PIN.

Then the researchers pushed 'START' to start the quiz. The researchers controlled the process of playing, by clicking "Next" or "Skip" button on the interface. Following the completion of the quiz, a report of the results was prepared and made accessible to the researchers for download.

At the end of each session; There was a time for open discussion with nursing students about the lecture content and Kahoot game quiz.

IV- Evaluation Phase:

It took three weeks (the last two weeks of May 2024 to the first week of June 2024). The effect of using Kahoot game as web- based assessment tool for telenursing educational program was evaluated immediately post program using the same tools and methods of data collection.

Statistical analysis:

Data were analyzed by (SPSS) version 26.0. Descriptive statistics were applied (e.g., mean, standard deviation, frequency and percentages, Chi-square (χ^2). Test of

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significance paired (t) test, Pearson correlation coefficients were used for investigation of the relationships between variables. The P- value is the probability of error that indicate significance of results through observed difference. A highly significant level value was considered when ($p < 0.01$). A significant level value was considered when $p < 0.05$. And none significant level value was considered when $p = 0.05$

Results:

Table (1): Shows that, more than half (58.8%) of nursing students had 21 years old. The majority (85.3%) of them were female, most of them (94.1%) were unmarried and more than half (52.9%) of them living in rural areas.

Figure (1): Illustrates that, the majority (86.8%) of nursing students had good knowledge level regarding telenursing at post program phase, compared to the minority (4.4%) of them in the preprogram phase.

Figure (2): Clarifies that, the majority (92.6%) of nursing students had satisfactory performance level regarding kahoot game in the post program phase, compared to approximately two fifth (44.1%) of them in the pre-program phase.

Table (2): Shows that, there was a highly statistical significant difference between pre and post program phases regarding nursing students' total Kahoot performance dimensions' scores ($p < 0.001$). Also, there

were highly statistical improvement of Kahoot performance dimensions' post program than preprogram. The highest mean percent (98.80%) was related to Kahoot skills in the post program phase, while the lowest mean percent (85.39%) was related to Kahoot attitude in the post program phase.

Figure (3): Shows that, the majority (88.2%) of nursing students had high academic engagement level in the post program phase, compared to almost two thirds (66.2%) of them in the preprogram phase.

Table (3): Shows that, there was highly statistical significant difference between pre and post program phases in nursing students' total academic engagement dimensions' scores ($p < 0.001$). Also, there were highly statistical improvement of academic engagement dimensions' post program than preprogram. The highest mean percent (93.9%) of students' academic engagement was related to behavioral engagement in the post program phase, while the lowest mean percent (91.7%) of students' academic engagement was related to interaction between students and faculty teaching staff members in the post program phase.

Table (4): Shows that, there was a highly statistical significant correlation among studied nursing students' telenursing knowledge, kahoot performance and their academic engagement pre and post program phase.

Table (1): Frequency distribution of studied nursing students' personal data (n=68).

Personal data	No	%
Age		
21 years	40	58.8
± 22 years	28	41.2
$\bar{X}\pm SD$	21.51±0.74	
Gender		
Male	10	14.7
Female	58	85.3
Marital status		
Married	4	5.9
Unmarried	64	94.1
Residence		
Urban	32	47.1
Rural	36	52.9

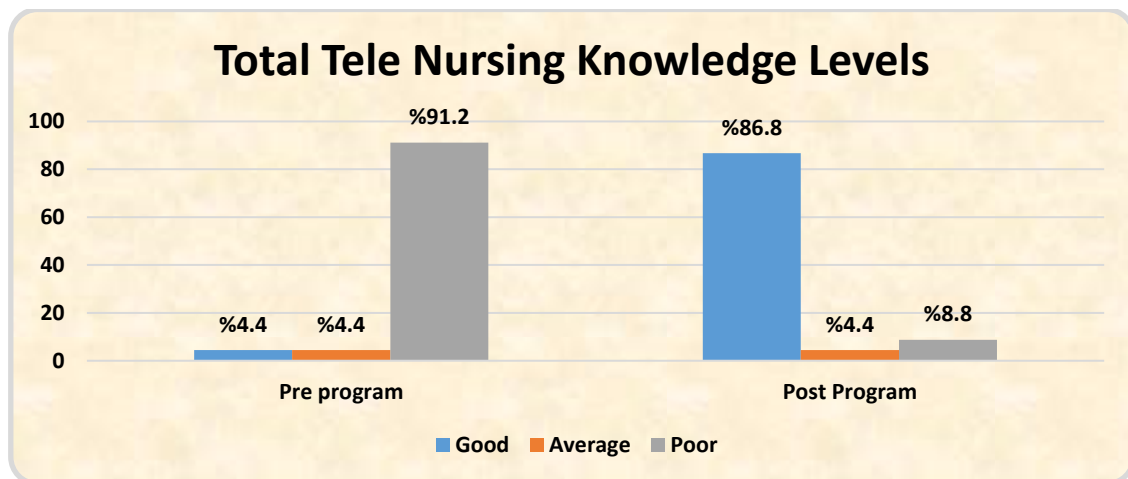


Figure (1): Total tele nursing knowledge levels of studied nursing students pre and post program phases

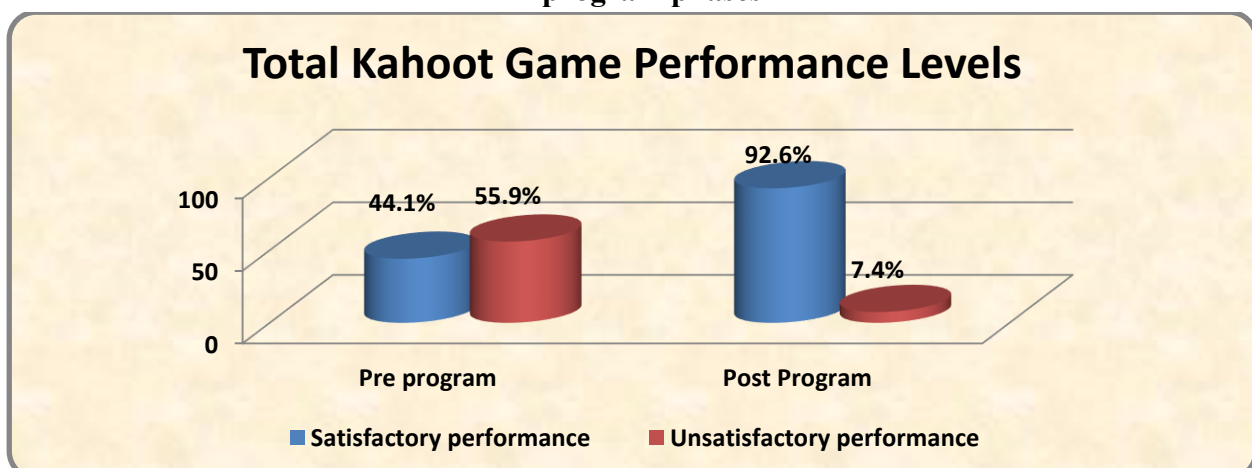


Figure (2): Total kahoot game performance levels of studied nursing students pre and post program phases

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Table (2): Total mean scores and standard deviation of kahoot performance dimensions among studied nursing students in pre and post program phases

Kahoot performance dimensions	Minimum score	Maximum Score	Pre Program		Post Program		t-test	P value
			$\bar{X} \pm SD$	Mean%	$\bar{X} \pm SD$	Mean%		
Kahoot knowledge	0	20	17.67 ± 3.28	30.05	17.67 ± 3.28	88.35	25.156	0.000**
Kahoot attitude	29	87	48.18 ± 1.95	48.18	48.18 ± 1.95	85.39	19.194	0.000**
Kahoot skills	19	57	44.42 ± 9.17	44.42	44.42 ± 9.17	98.80	10.310	0.000**
Total kahoot performance	48	164	57.22 ± 20.67	57.22	57.22 ± 20.67	87.23	10.935	0.000**

(**A highly statistical significant difference $P \leq 0.001$)

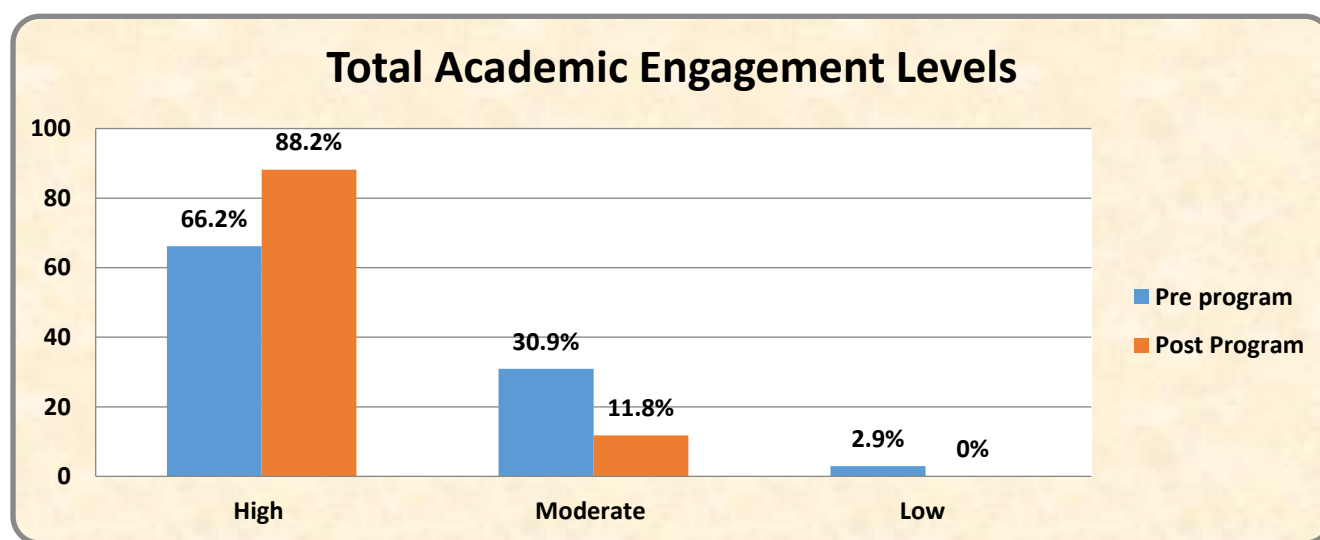


Figure (3): Total academic engagement levels of studied nursing students pre and post program phases

Table (3): Total mean scores and standard deviation of academic engagement dimensions among studied nursing students pre and post program phases

Academic engagement dimensions	Minimum Score	Maximum Score	Pre Program		Post Program		t-test	P value
			$\bar{X} \pm SD$	Mean%	$\bar{X} \pm SD$	Mean%		
Behavioral engagement	9	27	21.50±3.61	79.6	25.35±2.21	93.9	7.797	0.000**
Cognitive engagement	10	30	24.83±4.01	82.8	27.88±3.16	92.9	4.850	0.000**
Active and collaborative learning	7	21	17.14±3.05	81.6	19.58±1.69	93.2	5.603	0.000**
Interaction between students and faculty teaching staff members	5	15	11.98±2.16	79.9	13.76±1.64	91.7	5.566	0.000**
Total academic engagement	31	93	75.47±11.36	81.2	86.58±8.22	93.1	6.548	0.000**

**A highly statistical significant difference $P \leq 0.001$)

Table (4): Correlation matrix among study variables pre and post program phases

Variables	Program phases	Total tele-nursing knowledge		Total Kahoot performance		Total academic engagement	
		r	P-value	r	P-value	r	P-value
Tele-nursing knowledge	Pre program	1	----	0.098	0.425	0.927	0.000**
Kahoot performance		0.817	0.000**	1	----	0.011	0.928
Academic engagement		0.776	0.000**	0.218	0.011*	1	----
Tele-nursing knowledge	Post program	1	----	0.457	0.000**	0.399	0.000**
Kahoot performance		0.316	0.009**	1	----	0.247	0.042*
Academic engagement		0.645	0.000**	0.233	0.006**	1	----

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

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Discussion:

Learning using Kahoot offers learning that is both challenging and fun. Kahoot's interactive quiz format allows students to think critically and find the best solutions within a limited time. Kahoot, a game-based assessment tool, encourages students to actively participate in learning through action and reflection. Kahoot encourages students to respond quickly to questions while considering the available options. Plus, live rankings and grading within Kahoot provide instant feedback to students and enhance classroom engagement. (Kollo, et al., 2024).

The current study aimed to determining the effect of using Kahoot game as web-based assessment tool for telenursing educational program on nursing students' academic engagement.

Regarding total tele nursing knowledge level of the studied nursing students pre and post program phases, the study result revealed that the majority of nursing students had good knowledge level regarding telenursing at post program phase, compared to the minority of them in the preprogram phase.

From the researchers' point of view, this finding could be attributed to the effectiveness of the educational program using Kahoot game as assessment tool was evident and ensured that students were able to retain information effectively and also constructive feedback given from Kahoot game have reinforced their understanding and boosted their confidence.

The finding was consisted with **Cadet, (2023)** who stated in the study done on nursing students at Hostos Community College in Newyork that Kahoot game increase students'

knowledge, critical thinking skills and lead to maximize the effectiveness of learning. Also, the result of the present study was in the same line with **Barus, & Salmiah (2024)** who reported in the study done on Indonesian high school students that Kahoot game is beneficial for students to gain maximum knowledge.

Regarding total performance level of studied nursing students regarding Kahoot game pre and post program phases, the study result illustrated that the majority of nursing students had satisfactory performance level regarding Kahoot game in the post program phase, compared to approximately two fifth of them in the pre-program phase.

From the researchers' point of view, the satisfactory performance of nursing students can be attributed to many factors as nursing students, being part of a generation accustomed to digital tools, are likely to find Kahoot intuitive and motivating, which can positively influence their attitude and overall performance, also satisfactory performance was driven by the interactive, feedback-rich, and student-centered learning approach facilitated by Kahoot.

The study result was matched with **Truong, & Dinh, (2024)** who stated in the study done on English language students at Hanoi University, Vietnam that there was significant improvement in students' performance levels after application of Kahoot game in learning.

The result was disagreed with **Martinez-Jimenez, et al., (2021)** who reported in their study done on Business Management, Marketing and Sociology students, University of Jaén, Spain that Kahoot did not significantly improve the overall performance levels of students in terms of knowledge retention or academic achievement.

Regarding total mean scores and standard deviation of telenursing knowledge dimensions among studied nursing students in pre and post program phases, the study result showed that there was a highly statistical significant difference between preprogram and post program regarding nursing students' total telenursing knowledge dimensions' scores. Also, there were highly statistical improvement of telenursing knowledge dimensions' post program than preprogram. The highest mean percent was related to concept of telenursing in the post program phase, while the lowest mean percent was related to introduction to telehealth in the post program phase.

From the researchers' point of view, the Kahoot game give students full opportunity to re-examine their performance many times with explaining their mistakes. Additionally, students self-evaluated the performance several times until reached perfectly which increased student trust in their performance.

The result was congruent with **Alam et al., (2024)** who reported in the study done on students of Bachelor of Education, 3rd semester, Women University, Rawalpindi that there was a highly significant improvement regarding students' skills at post intervention. Moreover, the result was in line with **Aibar-Almazan et al., (2024)** who reported in the study done on university students in a Bachelor's degree program in Physiotherapy, University of Jaen, Jaen, Spain that there was highly significant difference between the pre and post program phase regarding nursing students' Kahoot performance level.

Regarding total academic engagement levels of studied nursing students, the study results revealed that the majority of nursing students had high academic engagement level in the post program phase, compared to almost two thirds of them in the preprogram phase.

From the researchers' point of view, this highlights the value of implementing structured educational interventions to positively influence nursing student involvement and commitment to their academic activities and fosters students' self-reflection and enhances their self-confidence, ultimately contributing to an improvement in overall academic engagement.

This result was congruent with **Kollo, (2024)** who reported who reported in the study done on university students in Lombok that there was a strong correlation between Kahoot game and engagement, motivation. This result was incongruent with **Nadeem, et al., (2023)** who reported in their study done on engineering students in American University of the Middle East, Kuwait that the incorporation of a leaderboard as a gaming element in the study was found to demotivate some students.

Regarding total mean scores and standard deviation of academic engagement dimensions among studied nursing students pre and post program phases, the study results revealed there was highly statistical significant difference between pre and post program phases in nursing students' total academic engagement dimensions' scores. Also, there were highly statistical improvement of academic engagement dimensions' post program than preprogram. The highest mean percent of students' academic engagement was related to behavioral engagement in the post program phase, while the lowest mean percent of students' academic engagement was related to interaction between students and faculty teaching staff members in the post program phase.

From the researchers' perspective, this improvement in the student engagement could be resulted from their readiness to learn new

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skills to facilitate their dealing with learning and improve their interaction and engagement, also this improvement could be resulted from their readiness to utilize modern teaching and evaluative approaches as Kahoot game that can facilitate the interactions and collaboration in the learning process.

This finding was matched with **Salas-Pilco et al., (2022)** who revealed in the study done on higher education institutions students in Latin American that students become more motivated when they are grouped and involved in classroom activities. The result of the study was inconsistent with **Sobhy, et al., (2024)**, who found in their study done on nursing students at Benha University that the highest mean score of students' academic engagement was related to cognitive engagement.

Regarding correlation matrix among study variables pre and post program phases, the current study showed that there was a highly statistical significant correlation among studied nursing students' telenursing knowledge, kahoot performance and their academic engagement pre and post program phases.

From the researchers' perspective, this finding suggests that improvements in telenursing knowledge are strongly associated with enhancements in interactive learning as measured by Kahoot performance and overall academic engagement which underscore the importance of incorporating interactive and technology-based learning strategies to promote a comprehensive and engaging educational experience for nursing students.

This result was supported by **Lashari et al., (2024)** who stated in the study done on engineers' students at National University of Sciences and Technology, Islamabad, Pakistan that there was a high significant positive

correlation between students' knowledge, attitude and academic engagement. Also, this finding was aligned with **Basaran, & Duru (2024)** whose finding in their study done on nursing students at Agri Ibrahim Cecen University, Turkey, revealed that Kahoot's ability to provide instant feedback and foster competition and collaboration among students may enhance motivation and self-efficacy, which are known contributors to improved academic performance.

Conclusion:

The present study concluded that the implementation of Kahoot game as web based assessment tool for telenursing educational program led to significant positive improvement of nursing students' knowledge regarding telenursing, and their performance (knowledge- attitude- skills) regarding Kahoot game and also led to positive effect on nursing students' academic engagement.

Recommendations:

- Introduce tele-nursing as a course into the nursing curriculum to raise students' knowledge.
- Integrate kahoot game into the nursing curriculum as a formative assessment tool for enhancing quality of education and students' engagement in lectures.
- Participate teaching staff in a series of training programs to learn how to apply Kahoot game as web-based assessment tool.
- Develop educational workshops for nursing students about kahoot game as web based assessment tool.

Further Research:

- Replicate study with more nursing students is highly recommended to achieve generalizable results and generate more evidence on the effects of kahoot game as web based assessment tool

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العلاقة بين اتجاه طلاب التمريض نحو لعبة كاهوت كأداة تقييم مبنية على الويب والاندماج الأكاديمي

حسنا صالح السيد - جيهان محمد أحمد - سلوى إبراهيم محمود - شيماء محمد عربى

التعلم القائم على اللعب مثل لعبة كاهوت قد جذب اهتماماً كبيراً من المعلمين الذين يهدفون إلى تعزيز تحفيز الطلاب ومشاركتهم في الفصول الدراسية. يُعتبر دمج الألعاب ضرورياً لرفع مستوى مشاركة الطلاب في المحاضرات، حيث أن الدروس الممتعة تجذب انتباه الطلاب. **الهدف:** تهدف الدراسة إلى تقييم العلاقة بين اتجاه طلاب التمريض نحو لعبة كاهوت كأداة تقييم مبنية على الويب والاندماج الأكاديمي. **تصميم البحث:** تم استخدام تصميم بحث وصفي ارتباطي. **مكان الدراسة:** تم إجراء هذه الدراسة في كلية التمريض، جامعة بنها، محافظة القليوبية، مصر. **عينة الدراسة:** شملت عينة عشوائية بسيطة من ٦٨ طالباً في السنة الرابعة من كلية التمريض. **أدوات جمع البيانات:** تم استخدام أداتين لجمع البيانات؛ استبيان الاتجاهات، استبيان الاندماج الأكاديمي. **النتائج:** أظهرت النتائج أن (٨٨,٢٪) من طلاب التمريض كانت لديهم اتجاهات إيجابية تجاه لعبة كاهوت و(٨٥,٣٪) منهم كانوا يتمتعون بمستوى عالٍ من الاندماج الأكاديمي. **الملخص:** كان هناك ارتباط إيجابي ذو دلالة إحصائية بين اتجاهات طلاب التمريض تجاه استخدام لعبة كاهوت الاندماج الأكاديمي. **التوصيات:** تطوير ورش عمل تعليمية لطلاب التمريض حول لعبة كاهوت كأداة تقييم عبر الإنترنت وتطوير برنامج تدريبي لأعضاء هيئة التدريس حول كيفية إنشاء اختبار في لعبة كاهوت.