Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5, 1954-1962
2024
Publisher: Learning Gate
DOI: 10.55214/25768484.v8i5.1930

Knowledge and attitudes about interactive digital tools for learning medical terminology among students

Norah Banafi[1*], Raji Kaliyaperumal[2]
[1]Department of English, King Khalid University, Thohama Branch, Muhayil, Saudi Arabia; obanafi@kku.edu.sa (N.B.).
[2]College of Applied Medical Science, King Khalid University, Muhayil, Kingdom of Saudi Arabia; rrajamanickam@kku.edu.sa (R.K.).

Abstract: Learning is a self-contained process, and the most active components are the learners' imaginative thinking and constructive cognitive engagement. It's been established time and time again that effective interactions and communication between professors and students are crucial to learning. This essay aims to demonstrate the usefulness of interactive technology. This study used a descriptive study approach. Convenience sampling was used to pick 136 students from the College of Applied Medical Sciences at King Khalid University (KKU), Saudi Arabia, who enrolled in a 4-year Baccalaureate nursing program. This research was conducted in the 2021–2022 academic year. A questionnaire, such as the five-point Likert scale, was used to collect the data. SPSS was used to do statistical analysis on the collected replies. The findings showed that employing an interactive digital tool significantly improved the students' understanding, and they also showed a good attitude regarding using the session to learn about medical terms.

Keywords: *Attitude, Interactive digital tool, Knowledge, Medical terminology, Students, Word wall.*

1. Introduction

Technology is practically ubiquitous in the environment we live in, and students are better than anybody else at adjusting to it. Students, as compared to teachers, were raised in a digital age. Students of all ages using technology in every part of their lives is very normal. This is why using digital tools in the classroom is becoming increasingly important. Traditional teaching strategies are already undergoing changes to better meet the needs of students in the twenty-first century and advance instructors' professional practices. The digital era is already in progress. Students' curiosity is aroused, their engagement is increased, and their learning and comprehension are improved when technology is used in the classroom. Every great teacher places a high focus on these elements, and using digital technologies in the classroom today makes it simple to accomplish them. The development of technology has a significant impact on a variety of facets of our life, including education. Numerous colleges and educational institutions have been searching for fresh approaches and strategies to successfully implement internet-based technology in efforts for online learning and teaching during the past 20 years. The current model of teaching and learning must evolve as a result of advancements in interactive and instructional technologies (Altunisik, 2013).

Utilizing digital technology for learning can be complemented by understanding how to use it. Studies have shown that integrating tools and technologies opens up possibilities for collaborative observation and learning that is motivated. Undergraduate students' use of modern technology in Higher Education Institutions (HEI), in particular, opens up new possibilities for critical thinking and group assessment (Basogain et al, 2018). The need for this has also been recognized by HEI, which have been concentrating on embracing novel approaches to improve teaching and learning outcomes

* Correspondence: obanafi@kku.edu.sa

(Rasmussen and Hagen, 2015). HEI work diligently to equip campuses with the newest technologies and trends in mind as well as the most effective teaching methods (Sriarunrasmee et al, 2015). In order to fully take advantage of the potential presented by cutting-edge technologies, universities typically plan for upcoming obstacles (Aparicio et al, 2016). These institutions are updating conventional educational procedures by utilizing the most recent tools and communication techniques.

According to Eastman (2007), interactive technology can be utilized for survey questionnaire, where any response is acceptable, to introduce topics and highlight the opinions of the class, for open-ended questions where students are randomly selected to participate (using the system's random function), and for multiple-choice questions to assess the students' subject knowledge and determine whether the class is ready to move on to the next topic. These questions then appeared on the exams, giving the pupils an incentive to make sure they remembered the material.

Students would engage in learning more enthusiastically in interactive learning environments where their thoughts and feelings are transferred to the learning environment through methods that allow active learning and teaching, such as creative drama, roleplaying, problem solving, discussion, and group work. As there is no set seating arrangement in the learning environment, students would have the freedom to wander around and converse in person while expressing all of their emotions (Aykac, 2016).

Only when university instructors are properly versed in the knowledge and comprehension of the most recent technological solutions are they able to apply the right tool at the proper location. To address the aforementioned issues, technical necessities such as: Blackboard, MOODLE, Web 3.0, email, discussion boards and Internet speed, and learning abilities such as: motivation, social interaction, and self-discipline have recently been added into blended courses (Aljawarneh, 2020, Müller & Wulf, 2020). Another technical method to handle this issue is through some creative interactive tools like Tencent Meeting and Rain Classroom (Lu and Ding, 2020). The data analysis function could help the instructor understand the students' learning situation regarding the course content and quickly optimize the teaching strategy by providing timely feedback from students' preview and review performance, the quiz answers in and after class, as well as the final test scores.

May (2004) carried out a study with first graders as part of an action research project to enhance their reading of high-frequency words. For the first three weeks, students practiced reading words on flash cards. The following three weeks, students engaged in word wall activities using new terms. After completing the word wall exercises, students displayed more progress while reading the words, using them to complete sentences, and taking spelling tests than when using flash cards. Students also liked the word wall exercises, which might have helped them learn more.

In order to understand how first graders used word walls, Walton (2000) performed an action research experiment in which 63 students from three separate classes were interviewed. This study found that because teachers have used word walls for writing assignments, students believed they were helpful writing tools. This implies that a teacher's attention could influence how often students employ word walls. The best gaming environment for vocabulary practice is a word wall. It offers a large variety of game styles that are advantageous and appealing to the target audience, in this case, the students in primary schools. Contrarily, choosing a game that is engaging and successfully reaches the learning objectives is essential because there are games with learning benefits but minimal fun aspect (Jantke & Hume 2015). Some games lack educational objectives and are therefore unsuitable for use in the learning process with learning objectives. A thoughtful selection of mobile learning resources is required for the effective integration of learning theory into mobile learning that may seamlessly combine education and enjoyment and, as a result, pique students' interest and increase motivation to learn.

Word walls help children improve their phonics and spelling abilities (Kish, T. (2018). The pupils may visualize both the relationships between words and the spelling patterns by looking at the words on the word walls. As a result, students who are reading and writing at grade level can use what they observe to successfully develop the skills needed to improve their phonics and spelling. The word wall

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 1954-1962, 2024
DOI: 10.55214/25768484.v8i5.1930

was chosen by the researcher to teach medical language while keeping in mind the interactive digital teaching tool. This study's goal is to evaluate how well students understand and feel about using interactive digital tools to learn medical language.

2. Methodology

2.1. Design

Both quantitative and descriptive elements are used in the study design. The knowledge and attitudes towards using an interactive digital tool to learn medical terminology were assessed using a cross-sectional survey.

2.2. Population

136 students (85%) who have completed the survey out of 160 students in the nursing program at King Khalid University made up the population. The population had participated in online Blackboard instruction throughout their previous academic year, who had respond to the research questions.

2.3. Data Collection

English was used to design the questionnaire. The tool was created using the researcher's knowledge, observations, literature review, and data collected information from a sample of earlier phases. Eight knowledge-related questions and five attitude-related questions made up the total number of thirteen questions. The data was gathered using a Likert scale.

The right interactive smart tools are essential for online teaching to maintain sufficient teaching effectiveness. The interactive word wall technology was chosen to teach the students based on the teaching background and the students' prior experience with Blackboard. The real-time barrage, submission, random roll call, and class bonus features of a word wall can be utilized to provide preview and review materials before and after class, send quizzes, collect student votes in-person, and enable real-time contact with students. Additionally, it can be utilized to enable live audio/video broadcasts using PowerPoint for audiences of thousands of people. Teachers can also evaluate how well their students are participating in class using the quiz answer time and accuracy rate, partial evaluation of exceptional students, and early warning students functions. The online instructors and students are also added to a WeChat group. After class, students can privately message the instructors on WeChat if they have any questions regarding any topic in the course. The word wall has numerous features, including quizzes, matching pairs for missing words, match up, random wheels, and random wheels, to enhance interaction between students and teachers. The students' successful engagement in learning medical terminology will be ensured by these features.

The informed consent form was also requested in addition to the completion of the questionnaire. It was promised that by employing codes rather than the respondents' identification, such as their names and student numbers, anonymity and confidentiality would be preserved. In order to give respondents adequate time to complete the questionnaires, they were asked to submit their answers within 2 weeks. Text messages (SMSs) were used to notify respondents of the questionnaire as soon as it was published. Students were reminded through SMS to return their completed questionnaires before the deadline.

2.4. Data Analysis

Data analysis was executed using Statistical Package for Social Science (SPSS) version 20 (Chicago, II, USA). The descriptive statistics were used to reveal the mean, Standard deviation and cumulative percentage of the responses toward items. A Correlation analysis was carried out to evaluate the relationship between the knowledge and attitude. Paired t-test to assess the pre and post score was done. The level of significance was fixed at 5%.

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Table 1.
Participants characteristics.

Characteristics	Value
Program	B. Sc (Nursing)
Digital tool	Wordwall
Mean age	18.78
Nationality	Saudi
Gender	Female
Total participants	136

3. Results

Table 1 lists the demographic details of the participants, all of whom were B.Sc. nursing students who were familiar with digital tools (Worldwall). With all participants being female Saudi nationals, the average age of the participants was 18.78. There were 160 participants in total, and 136 responded, for a response rate of 85%.

Table 2.
Mean Score of Pre and Post -test items on interactive digital tools in learning medical terminology.

Items	Pre-mean	Post-mean
Knowledge		
I can easily start medical consultation (Q1)	3.31±1.177	3.65±1.132
I can ask the patient personal information in English (Q2)	3.42±1.184	3.84±1.083
I can ask patient about his or her historical health family background in English (Q3)	3.49±1.174	3.82±1.088
I can ask the patient about the history of his or her problem in English (Q4)	3.89±1.146	4.23±0.996
I can ask patient about the causes and symptoms of his or her medical problem (Q5)	3.68±1.203	4.03±1.108
I have background in English medical terminology (Q6)	3.27±1.268	3.71±1.254
I can read and understand English medical report (Q7)	3.37±1.419	3.74±1.355
I can take medical information from patient in English (Q8)	3.51±1.265	3.99±1.183
Attitudes		
I like to learn medical terminologies through interactive digital tools (Q1)	3.62±1.054	4.00±0.966
Interactive digital tools helps me to understand medical terminologies (Q2)	3.76±0.913	4.12±0.861
leaning medical terminologies with interactive digital tools is fun (Q3)	3.99±0.852	4.36±0.727
Leaning with interactive digital tools helps me to be creative in applying medical terminologies (Q4)	3.65±0.906	4.03±0.869
Leaning with interactive digital tools helps me to memorize medical terminologies (Q5)	3.08±0.584	3.46±0.759

The pre and post mean score values were presented in Table 2. The score with the lowest pre-mean was "I have background knowledge in English medical terminology (Mean=3.27)," which was the lowest pre-mean score. The lowest pre-mean score for attitude was "Learning with interactive digital tools helps me memorize medical terminologies (Mean=3.08)", which was noted. The lowest observed

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post mean for knowledge was "I can initiate a medical consultation easily" (Mean=3.65), while for attitude, the lowest post-mean question (Mean=3.46) was the same for the pre-mean score question.

Table 3.
Pre and Post, Likert scale survey interactive digital tools in learning medical terminology.

Items		SA	A	N	D	SD
Knowledge						
Q1	Pre	28 (20.6)	27 (19.8)	50 (36.8)	21 (15.4)	10 (7.4)
	Post	41 (30.1)	31 (22.8)	44 (32.4)	15 (11)	5 (3.7)
Q2	Pre	25 (18.4)	47 (34.6)	37 (27.2)	14 (10.3)	13 (9.5)
	Post	45 (33.1)	44 (32.4)	32 (23.5)	10 (7.3)	5 (3.7)
Q3	Pre	26 (19.1)	53 (39)	31 (22.8)	14 (10.3)	12 (8.8)
	Post	41 (30.1)	53 (39)	25 (18.4)	11 (8.1)	6 (4.4)
Q4	Pre	46 (33.8)	56 (41.2)	16 (11.8)	9 (6.6)	9 (6.6)
	Post	67 (49.4)	48 (35.3)	10 (7.3)	7 (5.1)	4 (2.9)
Q5	Pre	39 (28.7)	48 (35.3)	27 (19.8)	11 (8.1)	11 (8.1)
	Post	59 (43.4)	42 (30.9)	21 (15.4)	8 (5.9)	6 (4.4)
Q6	Pre	21 (15.4)	51 (37.6)	26 (19.1)	20 (14.7)	18 (13.2)
	Post	43 (31.6)	48 (35.3)	18 (13.2)	16 (11.8)	11 (8.1)
Q7	Pre	34 (25)	45 (33.1)	19 (14)	14 (10.3)	24 (17.6)
	Post	53 (39)	39 (28.7)	14 (10.3)	16 (11.7)	14 (10.3)
Q8	Pre	33 (24.3)	46 (33.8)	29 (21.3)	13 (9.6)	15 (11)
	Post	60 (44.2)	40 (29.4)	20 (14.7)	7 (5.1)	9 (6.6)
Attitudes						
Q1	Pre	29 (21.4)	51 (37.5)	38 (27.9)	12 (8.8)	6 (4.4)
	Post	49 (36)	50 (36.7)	27 (19.9)	8 (5.9)	2 (1.5)
Q2	Pre	33 (24.3)	48 (35.3)	46 (33.8)	8 (5.9)	1 (0.7)
	Post	54 (39.7)	49 (36)	28 (20.6)	5 (3.7)	-
Q3	Pre	42 (30.9)	55 (40.4)	35 (25.8)	3 (2.2)	1 (0.7)
	Post	66 (48.5)	56 (41.2)	11 (8.1)	3 (2.2)	-
Q4	Pre	23 (16.9)	58 (42.6)	42 (30.9)	11 (8.1)	2 (1.5)
	Post	46 (33.8)	55 (40.4)	28 (20.7)	7 (5.1)	-
Q5	Pre	6 (4.4)	10 (7.4)	110 (80.9)	9 (6.6)	1 (0.7)
	Post	18 (13.2)	31 (22.8)	83 (61.1)	4 (2.9)	-

Note: SA-Strongly agree, A-agree, N-neutral, D-disagree, SD-Strongly disagree.

Table 3 results revealed the pre and post frequency among knowledge and attitude. Under knowledge "I can easily start medical knowledge consultation" observed that (36.8%) pre and (32.4%) post respondent have opted Neutral. In "I can ask the patient personal information in English" there was 53% who have informed Strongly agree and agree under pre knowledge and 65.5% under post knowledge. Knowledge question with "I can ask patient about his or her historical health family background in English" found that 58.1% of the respondent opted pre knowledge with strongly agree and agree 69.1% of the post knowledge respondents. Interestingly, 75% of the pre and 84.7% of the post respondents informed they strongly agree and agree with the knowledge question "I can ask the patient about the history of his or her problem in English". The knowledge question about "I can ask patient about the causes and symptoms of his or her medical problem" found 16.2% under pre and 10.3% under post observed with the respondents with disagree and strongly disagree. Most of the respondents opted Agree and Strongly agree for all the questionnaire under knowledge.

Regarding the attitude "leaning medical terminologies with interactive digital tools is fun", when comparing the pre-test & post-test score 66 (48.5%) respondents said strongly agree in post-test, 56

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 1954-1962, 2024
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(41.2 %) said agree for this question, this shows that the students learning skill was improved. The same as in "Interactive digital tools helps me to understand medical terminologies", 33 (24.3%) rated strongly agree and 48 (35.35%) as agree, after interactive class 54 (39.9%) rated strongly agree and 55 (40.4%) agree about using the method to improve the learning skill. When comparing pre-test and post-test value of "Leaning with interactive digital tools helps me to be creative in applying medical terminologies", 23 (16.9%) rated strongly agree whereas after the interactive session 46 (33.8%) students agree, for using interactive class to learn the medical terminology, the same there was difference between pre-test and post-test score.

Table 4.
Paired t- test of Students' knowledge and attitude towards interactive digital tools in learning medical terminology.

Items	Correlation	t-value sig.
Knowledge		
I can easily start medical consultation	0.866	6.585*
I can ask the patient personal information in English	0.839	7.515*
I can ask patient about his or her historical health family background in English	0.869	6.603*
I can ask the patient about the history of his or her problem in English	0.846	6.453*
I can ask patient about the causes and symptoms of his or her medical problem	0.846	6.216*
I have background in English medical terminology	0.876	8.044*
I can read and understand English medical report	0.902	6.934*
I can take medical information from patient in English	0.824	7.751*
Attitudes		
I like to learn medical terminologies through interactive digital tools	0.822	7.195*
Interactive digital tools help me to understand medical terminologies	0.771	6.828*
leaning medical terminologies with interactive digital tools is fun	0.762	7.852*
Leaning with interactive digital tools help me to be creative in applying medical terminologies	0.785	7.502*
Leaning with interactive digital tools help me to memorize medical terminologies	0.549	6.796*

Table 4 displayed a statistically significant ($p<0.05$) relationship between all questionnaire responses with knowledge and attitudes about utilizing word walls to teach medical terminology. It's interesting to note that there was low positive correlation between the attitude and the knowledge questions. The attitude question, "Leaning with interactive digital tools help me to memorize medical terminologies" had the lowest correlation value ($r=0.549$). This study found that respondents were more knowledgeable than attitude towards learning medical terminology.

Table 5.
Knowledge, attitude and overall paired score on students' knowledge and attitude towards interactive digital tools in learning medical terminology.

Item	Correlation	T-value (Sig.)
Overall knowledge	0.882	19.087*
Overall attitude	0.748	15.109*
Overall pre-post	0.841	22.391*

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 1954-1962, 2024
DOI: 10.55214/25768484.v8i5.1930

Between the pre-test and post-test, there was a significant difference ($p<0.05$) in overall knowledge and attitude about using word walls as digital learning tools for medical terminology, according to Table 5. All three overall factors have a very high positive correlation with one another.

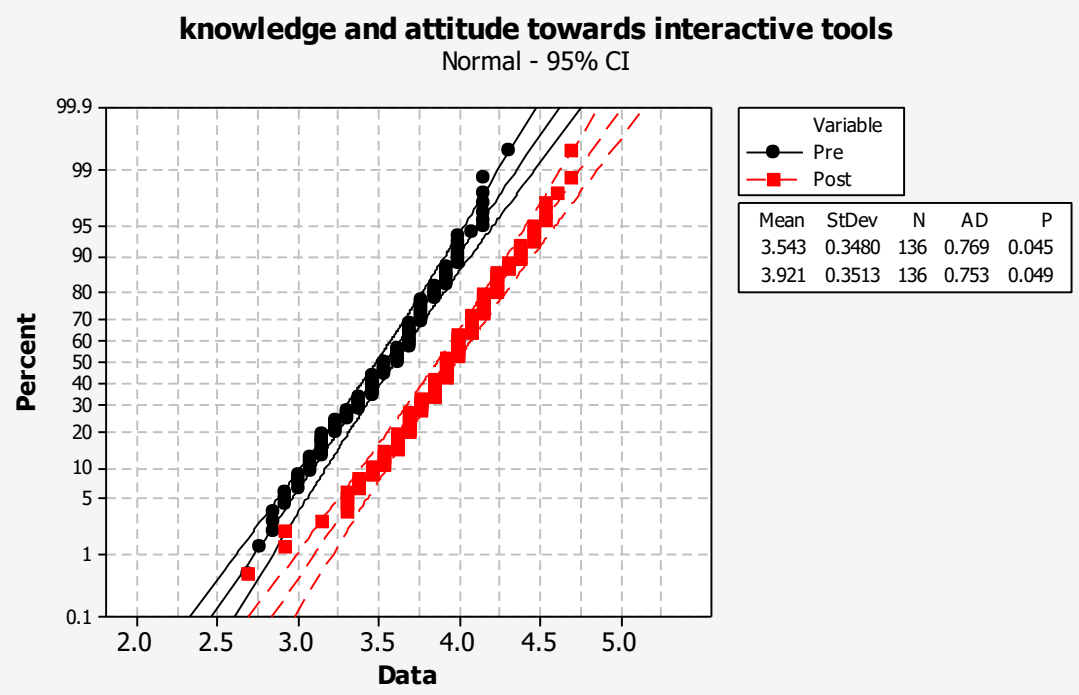

Figure 1.
Pre and post probability on students' knowledge and attitude interactive digital tools in learning medical terminology.

4. Discussion

The study's goal was to determine how using digital tools affected people's knowledge and attitudes toward learning medical terminology. The outcomes also showed that learning medical terminology enhanced post-test knowledge and attitude scores. Records from both pre and post events did show progress. Additionally, throughout interviews, participant enthusiasm was demonstrated. The post-running record scores may have benefited from this passion for the word wall exercises. According to the interview and observation checklist, the most effective activity was Be the Teacher. Overall, the participants did improve their reading fluency, which might have been aided by word walls and word wall activities.

The present study, which was supported by the author (Jasmine, J., & Schiesl, P. (2009), was to evaluate the impact of word walls and word wall activities. Additionally, the author claimed that employing a word wall would have given students a context for active and ongoing learning and helped them memorize high-frequency words. The student's ability to distinguish sight words in books, instructions, and activities also improved, according to this teacher. For example, a student confirmed that they were familiar with a word they saw on the word wall while reading a story, "I know that it is on the word wall". The children looked to be using the word walls as a tool for reading and writing tasks by pointing out to their peers that a specific word was on the word wall.

The WOW online games, according to (Min and Nasir, 2020), offer a good learning experience, a variety of game types, scores, and challenges. Additionally, it was discovered that the healthy competition emphasized in games increased intrinsic motivation and perseverance to reach desired goals and ranks. The ability to learn independently utilizing technologically advanced tools is one of the skills

Edelweiss Applied Science and Technology
ISSN: 2576-8484
Vol. 8, No. 5: 1954-1962, 2024
DOI: 10.55214/25768484.v8i5.1930

highlighted in education, according to (Dastyck, 2007). As previously noted, word walls allow kids the chance to independently learn the spelling of the words they contain without the aid of a teacher. The pupils don't have to ask the teacher to spell every word for them because they have a reference in their classroom to utilize when writing. Students who perform below grade level may consequently benefit from having access to a visual resource that is a regular fixture in the classroom.

Innovative applications of interactive tools and technologies promoted engagement and inclusive learning. During classroom activities, there was also evidence of an improvement in the participation, interest, and engagement of the students. Additionally, data from previous studies shows that students prefer the use of technology and participatory activities. Although the usage of mobile phones received excellent feedback from the participants, there are several restrictions, such as limited access to mobile phones or laptops, the Internet, and expensive software licenses for many users. The group exercises and problem-based assignments matched the learning objectives.

5. Conclusion

The study demonstrates that the use of pre- and post-survey measures at the beginning and conclusion of the semesters utilizing Interactive Technology improves the students' knowledge and attitude regarding both the subject matter and the use of Interactive Technology. Through the use of post measures taken at the end of the semesters using Interactive Technology, the authors present a benchmark that suggests, on average, students perceive that a course using Interactive Technology is more engaging, more attention-getting, and more rewarding. This study was designed to assess how well word walls and word wall activities work in assisting first-year nursing students in becoming more proficient readers of medical terminology. The findings imply that despite the academic ability of the students, the word wall activities may have contributed to the development of their high-frequency word vocabulary. Through the use of word wall exercises, students can increase their high-frequency word vocabulary, which will help them read more fluently and ultimately improve their reading comprehension.

6. Study Limitations

With only (n=136) participants, the study was carried out in a practical educational setting. This might affect how generalizable the findings are on an ecological level. The study only able to assess the effect of interactive and group activities on student involvement and motivation. From the available data that more learner involvement might have a favourable impact on the learner's overall performance. The current study, which was conducted on first-year nursing undergraduate students at King Khalid University in Saudi Arabia, will be supported by additional research in a variety of settings and contexts. The age range and gender distribution of the scope need to be expanded further.

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