

# Nursing Students' Attitude regarding Electronic based Learning Application on Practical Skills

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## Abstract

**Background:** Implementation of electronic based learning requires understanding students' attitude that would facilitate effective electronic learning delivery. **This study aimed** to evaluate nursing students' attitude regarding electronic based learning application on practical skills. **Research design:** Quasi-experimental study design (pre-posttest, one group) was utilized to conduct this study. **Setting:** This study was conducted at Faculty of Nursing, Benha University, Egypt. **The sampling:** systematic random sample of 31 Community Health Nursing undergraduates' students were recruited. **Tools: Three tools were used I):** A structured questionnaire of personal characteristics from Community Health Nursing students, **II):** Attitudes scale of Community Health Nursing students regarding electronic based learning application on practical skills before and after implementation of flipped learning based on mobile application as an example of electronic based learning and **III):** A structured questionnaire format that was developed to identify the Community Health Nursing students' evaluation mobile application. **Results:** 90.3% of the Community Health Nursing students had positive attitude level post intervention and 83.9 % of them had good evaluation of mobile learning application using flipped leaning method in practical learning. **Conclusion:** Application of electronic based learning had positive effect on the attitudes of Community Health Nursing students and also helped them to evaluate the mobile learning application using flipped classroom method as good. **Recommendations:** Provide training programs to students on using flipped classroom method based on mobile application in education.

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**Key words:** Electronic learning, Nursing students' attitude, Practical skills.

## Introduction

Nurses in community and public health settings frequently work in task forces charged with developing action plans that are practical and likely to succeed in addressing emerging public health issues. Sound decision making and implementation of safe and effective community health nursing interventions require clear understanding of the clinical and scientific evidence that supports this practical places. Essential skills include the ability to identify a problem, obtain the most relevant information to solve it and implement an intervention tailored to the situation and guided by the evidence. Developing these essential skills in undergraduate nursing students require implementation of learning strategies embedded throughout the curriculum that

promote evidence-based practice (*Matsuda et al., 2023*).

Clinical practice education is the heart of nursing education and the costliest part of the nursing curriculum. Identifying and developing proper teaching and learning strategies to enhance nursing students' nursing skills and knowledge are must-do challenges for nursing faculty members. Not only are the contents and structures of learning aids important, but also the flexibility and accessibility of the materials are essential to allow students to rehearse and review them at any time and place (*Sorouh et al., 2021*).

E-learning is the alternative to traditional education and it can also be a complementary to it. On the other hand, the mobile learning (m- learning) is the complementary of both

traditional learning as well as e-learning. M-learning is the subset of e-learning and the e-learning is a macro concept and it includes the mobile learning as well as online environments. M-learning is e-learning through mobile computational devices: Palms, even the digital cell phone.” Distance learning (D-learning) is a tool which addresses a numerous of challenges that are faced by educational institutions, community leaders as well as by the policymakers and it helps learners to connect in the remote areas “with high quality college – and career-prep courses taught by a highly qualified teacher who does not work inside their school building”. In addition, the D-learning can also be very helpful for instructors in fact who is facing a lot of barriers in order to meet student’s needs (*Lim, 2021*).

For community nursing students in clinical environments, studies have indicated that the use of mobile devices saves time and promotes self-efficacy. Furthermore, mobile devices may foster anytime and anywhere interactions between students and instructors (*Menon et al., 2020*). The nursing education system has evolved with an increased emphasis on student-centered education, such as implementing flipped classroom pedagogy. Given the promising positive educational outcomes, the trend of using flipped classroom pedagogy has become increasingly popular in undergraduate nursing education. This curricular reform which encompasses a combination of face-to-face and online teaching to promote student-centered learning this innovation using technology to move the classroom lecture to homework status and using face-to-face classroom time for interactive learning (*Youhasan et al., 2022*).

Community health Nurse educators recognize the importance of addressing inadequate preparation of pre-licensure nurse graduates. To prepare nurse graduates to meet the demands of a dynamic nursing workplace, active involvement in learning is needed in all aspects of nursing education. The nursing classroom is an appropriate setting to provide students with opportunities to apply learned content to situations they will encounter in

practice. Through this approach, students spend the majority of classroom time using course concepts to solve problems while developing important professional competencies such as interpersonal and teamwork skills. The flipped classroom requires the strategies which traditionally implemented in the classroom i.e., lectures that are now completed by the students at home. This creates the opportunity for activities that were once performed as homework to occur in the classroom setting (*Özbay & Çınar, 2021*).

E-learning is a relatively recent and rapidly expanding trend of nursing education. Therefore, assessing the attitudes of nursing students towards e-learning with standardized tools has gained importance. While nursing students’ attitudes toward mobile learning have already been explored, they have not been synthesized, even though the students can benefit greatly from this new learning approach. We can fully understand the real attitude of nursing students towards mobile learning, as well as learn about the obstacles that affect the use of mobile learning and the factors that promote mobile learning. This knowledge will in turn provide a reference for further promoting the application of mobile learning in the learning of nursing students (*Ozturk et al., 2022*).

### **Significance of the study**

Mobile learning provides an effective study platform for nursing students. While nursing students’ attitudes toward mobile learning have already been explored, they have not been synthesized, even though the students can benefit greatly from this new learning approach. There is great significance in studying the attitudes of nursing students toward mobile learning on learning achievement. We can fully understand the real attitude of nursing students towards mobile learning, as well as learn about the obstacles that affect the use of mobile learning and the factors that promote mobile learning. This knowledge will in turn provide a reference for further promoting the application of mobile

learning in the learning of nursing students (Chen et al., 2021).

### **Aim of the study**

This study aimed to evaluate nursing students' attitude regarding electronic based learning application on practical skills.

### **Research hypothesis**

Attitudes of Community Health Nursing students will be enhanced after application of electronic based learning using flipped classroom method.

## **Subjects and Method**

### **Research design:**

Quasi-experimental study design (pre-posttest, one group) was utilized to conduct this study.

### **Setting:**

This study was conducted at Faculty of Nursing, Benha University, Egypt.

### **Sampling:**

systematic random sample of 25% as one every four of community health nursing undergraduates' students which include (31 after withdrew of one student during study) who was enrolled at community health nursing course in second terms of 4<sup>th</sup> academic year 2021-2022 at Faculty of Nursing- Benha University and this study was conducted throughout 9 weeks from beginning of February 2022 to the first week of April 2022.

### **Tools of data collection:**

**Three tools were used to collect the data**

**Tool (I): -A structured questionnaire format:** It was developed by the researcher based on reviewing related literatures and it was written in simple clear English language: **It comprised of two parts: - It was concerned with:**

**A-** Personal characteristics of the studied sample from Community Health Nursing

students; **it comprised of three items;** age, sex and place of residence.

**B-** Data about electronic used by the studied sample students as; it comprised of **seven questions about;** type of mobile phone, operational system of mobile phone, available personal internet speed, level of practice in technology, type of the previously any course using electronic learning application, indication of use medical apps on the mobile and having any experience of attending flipped classrooms.

**Tool II:-** Attitude of students regarding electronic based learning application on practical skills before and after implementation of flipped learning based on mobile application as an example of electronic based learning adapted from (*Firmansyah et al., 2021*). The questionnaire was measured on a likert scale type of (agree, neutral and disagree) which was modified by researcher to assess the students' confidence, usefulness, learning motivation and satisfaction of using flipped classroom method based on electronic learning, it was written in simple English language by researcher and divided into **four items which included** (Confidence of participants toward practical course, Usefulness, Learning motivation and Satisfaction of using flipped classroom method based on electronic learning for participants from Community Health Nursing students).

### **Scoring system:**

**Attitude of the studied students toward practical course using flipped classroom method based on electronic learning:** It comprised of twenty-nine (29) statements; all statements were scored on a three points Likert Rating Scale whereas, (agree = 2, neutral =1, disagree = 0). For analysis students' responses were plotted under two main categories (positive & negative). The total the Community Health Nursing students' attitude score = (58 points) was considered positive if the score of the total students' attitude is  $\geq 60\%$  ( $\geq 35$  points) and considered negative if it is  $< 60\%$  ( $< 35$  points).

**Tool III:** - A structured questionnaire format to identify the studied sample' evaluation for electronic based learning application using flipped classroom on practical course adapted from (*Darling-Hammond & Rorthman, 2011*). The questionnaire was measured on a likert scale **which included three main items** (Evaluation of practical course using electronic learning, Evaluation during implementation of mobile application and Evaluation of mobile application using flipped classroom).

**Scoring system:**

**Evaluation of the studied sample toward practical course using electronic learning:** It comprised of forty-four (44) statements; all statements were scored on a three points Likert Rating Scale whereas, (Good = 2, average =1, poor = 0). The total of the studied sample from Community Health Nursing students' evaluation score = 88 points was considered good if the score of the total the studied sample from Community Health Nursing students' evaluation equals  $\geq 75\%$  ( $\geq 66$  points), while considered average if it equals 50-75% (44-66 points) and considered poor if it is  $< 50\%$  ( $< 44$  points).

**Content validity:**

The content validity of tools was done by Three of Faculty's Staff Nursing experts from the Community Health Nursing Specialties who reviewed the tools for clarity, relevance, comprehensiveness, applicability and give their opinions.

**Reliability of tools:**

Reliability of the tools was applied by the researcher for testing the internal consistency of the tool by administration of the same tools to the same subjects under similar condition on one or more occasion. The reliability was done by Cronbach Alpha coefficient test which revealed that each of the two tools consisted of relatively homogenous items as indicated by moderate to high reliability of each tool. The internal consistency of the attitude was 0.811 for studied sample and evaluation of the mobile flipped classroom method based on electronic learning was 0.902 for studied sample.

**Ethical considerations:**

1. Ethical certificate was approved from ethical committee at faculty of Nursing, Benha University.
2. All ethical issues were assured, approval and an informed oral and written consents from all study participants has been obtained after explaining the purpose of the study to gain their trust and cooperation. Each student had a choice to continue or withdraw from the study. Ethics, values, culture and beliefs were respected. The data collected was stored in confidential manner.

**Pilot study:**

The pilot study was carried out on {3} Community Health Nursing students' participant, which represented {10 %} of the study sample to test the clarity, objectivity, feasibility and applicability of tools using Google form questionnaire and observational checklist as pre-test sheet. No modification was done so the pilot study sample was included in the total sample.

**Electronic based learning application construction:**

An electronic based learning application was designed by the researcher after reviewing the related literature. It was implemented through three phases.

**Preparatory and assessment phase:**

Preparation of the study design and data collection tools was based on reviewing current, past, local and international related literature about electronic based learning by using periodical journal, magazines, books, internet search and similar application design to contrast-tools of the study and preparation of mobile application and clinical practical content, videos, activity based on community health nursing textbook on basic nursing skills.

**Implementation phase:**

## Nursing Students' Attitude regarding Electronic based Learning Application on Practical Skills

Data was collected over the second term of community health nursing practices which was exactly the first 9 weeks of practical course from the beginning of February to first week of April, 2022. ■

In this phase the researcher implemented the intervention from **the second week to seventh week**. Implementation of the application was done through 12 sessions (6 sessions online and 6 sessions face to face) the duration of each session was from 45 minutes to 3 hours.

**On the first session (face to face):** After getting the necessary official permission; the researcher introduced herself to the students, explained the process of activities and goals, the course syllabus and the planned curriculum content to the participants, explained functions and content of mobile application-based learning and the link to the data collection tools was sent to the students' mobile phones via WhatsApp™ so that they could complete the tools pre-intervention.

**The second session (online session):** The researcher explained how to enter on the constructed mobile learning application via WhatsApp™ and video record.

**From the third session onward,** implement the intervention on five procedures during 10 sessions in 5 weeks were presented following flipped classroom principles, including a three-step process (pre-class, in-class, and post-class activities)

### Evaluation phase:

Evaluation of electronic based learning application was done immediately after the end of the application on the first week of April 2022 by using the same pre/post-test and questionnaires using electronic forms as this study used attitudes scale of Community Health Nursing students regarding electronic based learning application on practical skills before and after implementation of flipped learning based on mobile application as an example of electronic based learning: (<https://docs.google.com/forms/d/e/1FAIpQLSfj7NHmKw6KilbjKbnxUrU1oSMsdjyhHo7>

[uTo6gza2BC5Z0Vg/viewform?usp=sf link](https://docs.google.com/forms/d/e/1FAIpQLSfj7NHmKw6KilbjKbnxUrU1oSMsdjyhHo7)). and a structured questionnaire format ([https://docs.google.com/forms/d/e/1FAIpQLSfUP8hGasaw6TZeOcwKKAuONoZ9Oxx6nBXjpHzK74a5DI\\_RPw/viewform?usp=sf link](https://docs.google.com/forms/d/e/1FAIpQLSfUP8hGasaw6TZeOcwKKAuONoZ9Oxx6nBXjpHzK74a5DI_RPw/viewform?usp=sf link)) that was developed to identify the Community Health Nursing students' evaluation mobile application after implementation the application.

### Statistical analysis:

All data collected were organized, tabulated and analyzed by using the Statistical Package for Social Science (SPSS) version 22, which was used frequencies and percentages for qualitative descriptive data, and chi-square coefficient  $\chi^2$  was used for relation tests and mean and standard deviation was used for quantitative data, Pearson correlation coefficient (r) was used for correlation analysis and degree of significance was identified. The correlation- coefficient was used (r).

### Results:

**Table (1):** Shows that; 62.5 % of the studied students aged from 21 to less than 22 years old with mean age was  $21 \pm 0.86$ , 90.6 % of them were females and 62.5 % of them lived in rural areas.

**Table (2):** Shows that; all of the studied sample students had advanced mobile phone, only one had Apple operation system of mobile phone, 56.3% of them had moderate internet speed, 84.4% of them are perfect users in practice of technology, 96.9% of them presented workshop about electronic learning and equally 87.5% of them use medical apps on the mobile for nursing care plan reference and drug reference.

**Table (3):** Shows that; there were highly statistically significance differences in pre and post intervention between confidence, usefulness, satisfaction of using flipped classroom method based on electronic learning, also between the total attitude of the studied groups (P- value < 0.001) and also there is statistically significance differences in

pre and post intervention between learning motivation toward practical course using flipped classroom method based on electronic learning (P- value < 0.05).

**Figure (1):** This figure illustrates that; 54.6 % of the studied students had positive attitude level pre intervention the flipped classroom method based electronic learning and then this percentage increased to 90.3% post intervention.

**Table (4):** Reveals that; equally 87% of intervention group students evaluate the practical course using flipped classroom based on mobile learning application regarding the course format, implementation of mobile application and also using flipped classroom method based on mobile learning application as good, additionally 9.6% of them evaluate practical course using flipped classroom based on mobile learning application in the total as average and furthermore 9.6% of them evaluate practical course using flipped classroom based on mobile learning application regarding the course presentation as poor.

**Figure (2):** This figure illustrates that; 83.9 % of the studied students evaluate using flipped classroom method based on the mobile learning application on practical course as good in total and only 6.5 % of them evaluate used mobile learning application on practical course as poor.

**Nursing Students' Attitude regarding Electronic based Learning Application on Practical Skills**

**Table (1):** Frequency distribution of the studied students regarding their personal characteristics (n=32).

Personal characteristics	Studied students (n=32).		X <sup>2</sup>	p-value
	No	%		
<b>Age/years</b>				
21 –	20	62.5	2.221	.306
22-	9	28.1		
≥23	3	9.4		
<b>Mean ±SD</b>	21±0.86			
<b>Sex</b>				
Female	29	90.6	.216	.641
Male	3	9.4		
<b>Residence</b>				
Urban	12	37.5	2.209	.133
Rural	20	62.5		

**Table (2):** Frequency distribution of the studied students regarding their using of electronics (n=32).

Items	No.	%
<b>Type of mobile phone</b>		
Advanced	32	100
<b>Operational system of mobile phone</b>		
Android OS	32	100
<b>Internet speed</b>		
High	6	18.7
Moderate	18	56.3
Low	8	25
<b>Level of practice in technology</b>		
Perfect users (use standard Web and mobile technologies, on a monthly Average and tend to engage in web publishing and file sharing).	27	84.4
Basic users (extremely infrequent use of new and emerging technologies but regular users of standard mobile features (i.e. call and text people).	5	15.6
<b>Previous course using electronic learning*</b>		
ICDL.	6	18.75
Online course	27	84.4
Workshop about electronic learning	31	96.9
<b>Indication of use medical apps on the mobile*</b>		
Nursing care plan reference	28	87.5
Drug reference	28	87.5

\*Answers are not mutually exclusive

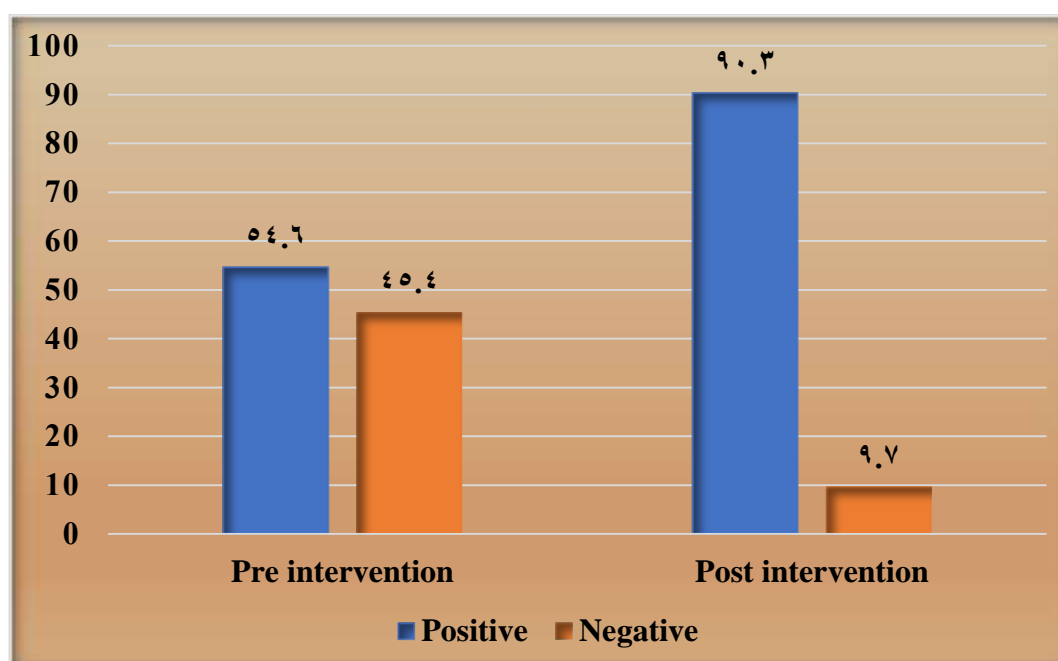
**Table (3):** Frequency distribution of the studied students' attitude toward practical course using flipped classroom method based on electronic learning (n=31).

Attitude	Negative/ Positive	Pre-intervention		Post-intervention		X <sup>2</sup>	p-value
		Studied students (N=31).		Studied students (N=31).			
		No	%	No	%		
Confidence of using flipped classroom method based on mobile learning application.	Negative	15	46.9	2	6.5	13.697	.000**
	Positive	16	53.1	29	93.5		
Usefulness of using flipped classroom method based on mobile learning application.	Negative	15	48.4	2	6.5	13.697	.000**
	Positive	16	54.6	29	93.5		
learning motivation of using flipped classroom method based on mobile learning application.	Negative	10	32.3	3	9.7	4.769	0.028*
	Positive	21	67.7	28	90.3		
Satisfaction of using flipped classroom method based on electronic learning	Negative	15	46.9	2	6.5	13.697	.000**
	Positive	16	53.1	29	93.5		
Total	Negative	15	48.4	2	6.5	13.697	.000**
	Positive	16	54.6	29	93.5		

\*\*Highly statistically significant difference (P > 0.001)

\* statistically significant difference (P > 0.05)

**Figure (1):** Percentage distribution of the students regarding their total attitude level pre and post intervention (n=31).



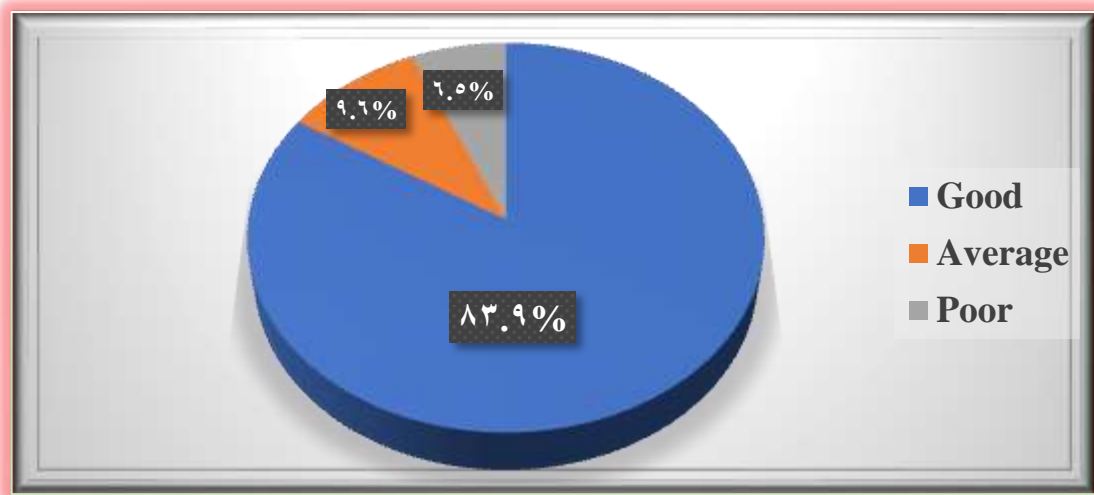


Nursing Students' Attitude regarding Electronic based Learning Application on Practical Skills

**Table (4):** Frequency distribution of the studied students regarding their evaluation of mobile application (n=31).

Evaluation of using flipped classroom method based on mobile application on practical course		Good		Average		Poor	
		No	%	No	%	No	%
1.Evaluation of practical course using flipped classroom based on mobile learning application.	Evaluation of the course design	26	83.9	3	9.6	2	6.5
	Evaluation of the course content	26	83.9	3	9.6	2	6.5
	Evaluation of the course format	27	<b>87.0</b>	2	6.5	2	6.5
	Evaluation of the course presentation	25	80.8	3	9.6	3	<b>9.6</b>
	Total	26	83.9	3	<b>9.6</b>	2	6.5
2.Evaluation during implementation of mobile application.		27	<b>87.0</b>	2	6.5	2	6.5
3.Evaluation of using flipped classroom method based on mobile learning application.		27	<b>87.0</b>	2	6.5	2	6.5

**Figure (2):** Percentage distribution of the studied students regarding their evaluation of the mobile learning application using flipped classroom method (n=31).



## **Discussion:**

Electronic learning (e-learning) in healthcare teaching was positioned as an important innovation in education for healthcare professionals. The academic setting is one of the most contexts analyzed concerning to nursing education to develop abilities required, regarding to perform competencies related to nursing care practice. Before moving forward in applying this new teaching approach, there is a need to obtain more information concerning nursing students' attitudes towards e-learning, and to determine in what way it could best be implemented for nursing scholars. As mentioned before, E-learning is becoming more essential to the future of nurse education and the facilitation of lifelong learning because of its benefits to extend learning and culture beyond the classroom. Therefore, it is important to examine student expectations concerning this new learning method (*Sánchez & Karaksha, 2023*).

### **Concerning to the electronics using by the Community Health Nursing students:**

Regarding students' mobile phone type, the current study showed that; all of the studied students had advanced mobile phone. This finding was inconsistent with *Karma et al., (2021)*, who studied "Blended Learning is An educational Innovation and Solution during The COVID-19 Pandemic, in Indonesia", (n=562), and found that; more than two thirds of their students (67.7%) had developed mobile phone. While, this finding agreed with *Othman et al., (2022)*, who studied "Nursing Students' Attitude and Satisfaction regarding to Blended Learning at The Time Of COVID-19 Pandemic, in Egypt", (n=400) and found that; most of their students (93.8%) had developed mobile phone. This might be due to mobile phone has several benefits in the students' educational process, such as enhancing learner participation in the teaching-learning process and providing easy access to more information, so many students had developed mobile phone.

Regarding students' mobile phone operation system, the current study showed that; most of the studied students had Android OS mobile phone. This finding agreed with the *Özkütük et al. (2021)*, who studied "The Readiness of Nursing Students for Mobile Learning: Cross-Sectional

Study. Contemporary Nurse ", that conducted at 3 different state universities, (n=678), and found that; the majority (84.6%) of their nursing students had Android OS mobile phone. From the researcher point of view, this finding might be due to the proportion of Apple OS apps for using the public is limited.

Regarding internet speed for practicing in technology, the current study showed that; more than half of the studied sample of Community Health Nursing students had moderate internet speed. This finding was inconsistent with *Qader & Yalcin (2019)*, who studied "The Effect of Flipped Classroom Instruction in Writing: A case Study " that conducted at Salahaddin University in Iraqi, (n=66) and found that; only tenth of their students (10.6%) had slow internet speed. From the researcher point of view, the students were lived in rural areas where irregular internet speed, so the researcher solved the problem by making the material downloaded to facilitate its study without internet.

Regarding students' level of practice in technology, the current study showed that; majority of the studied sample of Community Health Nursing students were perfect technology users. This finding was inconsistent with the *Abou Shosha et al. (2019)*, they studied "Effect of Mobile Based Learning Program on Postgraduate Nursing Students' Satisfaction and Attitudes in Faculty of Nursing Damanhour University", (n=36), and found that; more than half of nursing students (52.8%) perfect technology users.

Regarding students' previous E-learning courses taken, the current study showed that;

most of the studied sample received the workshop about electronic learning platform. This finding disagreed with *Mahrlamova & Chabanovych, (2021)*, they studied "Implementation of Interactive Methodology in Medical Education: Blended Learning Approach, E-Learning Versus Conventional Learning, in Ukraine", (n=80) and found that; majority of their students (80%) had taken platform course. From the researcher point of view, this finding might be due to the blended learning platforms were used to replace traditional face-to-face educational experience to improve the quality of learning and revise long-standing teaching methods through the possibilities offered by the modern technologies.

Also the result of this study showed that, the majority of the studied students had mobile phone device used to access the online course. This finding was inconsistent with *Saad et al., (2021)*, who studied "Comparing Undergraduate Nursing Student Academic Engagement and Achievement in Traditional Versus Blended Learning Models, in Pakistan", (n=162) and found that; less than three fifths of their students (56.3%) utilized smart phone device to access the online course. Moreover, this finding disagreed with *Resmiaty et al., (2021)*, who studied "The Implementation of Blended Learning in The New Normal Era at Vocational School of Health, in Indonesia", (n=158) and found that; more than two thirds of their students (69.6%) use smart phones in the educational process. From the researcher point of view, this might be due to one of the most useful benefits of using mobile devices for online learning is the freedom to learn from virtually anywhere on the planet.

Regarding students' use medical apps on the mobile, the current study showed that; the majority of the studied students used medical apps on the mobile for nursing care plan reference and drug reference equally. This finding was inconsistent with the study performed by *O'connor & Andrews (2018)*,

they studied "Smartphones and Mobile Applications (Apps) in Clinical Nursing Education: A Student Perspective", in Ireland, (n=195) and found that; 35% of their nursing students use mobile educational app for drug reference and 13% for nursing care plan.

**Concerning to attitude of the studied students toward practical course using flipped classroom method based on electronic learning**, the current study showed that; there were statistically significance differences between total attitude of the studied sample in pre and post intervention from Community Health Nursing students toward practical course using flipped classroom method based on electronic learning in learning motivation (P- value <0.05). These findings agreed with *Chao et al. (2022)*, they studied "Effectiveness of Digital Flipped Learning Evidence-Based Practice on Nurses' Knowledge, Attitude and Practice: A Quasi-Experimental Trial" that conducted at in a school of nursing in Seoul, Korea, (n=114) and reported that; there were statistically significance differences between attitude of the flipped and conventional groups toward intervention learning in post-test. **From the researcher point of view**, these findings might be due to the studied sample' attitude improved after their learning skills increased and became more motivated in performed skills in different situations.

**Concerning to the studied students regarding their total attitude level pre and post intervention**, the current study showed that; more than half of the studied sample from Community Health Nursing students had positive total attitude level pre intervention the mobile learning using flipped classroom method and then this percentage increased to the most of them post intervention the mobile learning using flipped classroom method. These findings agreed with *Chung & Lee (2018)*, they studied "The Effects of Flipped Learning on Learning Motivation and Attitudes in A Class of College Physical Therapy Students" conducted in Korea, (n= 97) and reported that their results showed significant differences in learning motivation (attention,

relevance, confidence, satisfaction) and attitudes in pre and post intervention. **From the researcher's point of view**, these findings might be due to the studied sample changed their attitudes after applying the intervention.

**Concerning to evaluation of the studied students toward practical course using flipped classroom method based on electronic learning**, the current study showed that; majority of studied sample of Community Health Nursing students had good evaluation regarding the program course format, mobile application using flipped classroom method, the course design, course content, implementation of mobile application and furthermore, regarding program course presentation respectively. These findings were in the same line with *Castro et al. (2019)*, who studied "Game-based Learning in Undergraduate Nursing Education: A Systematic Review of Mixed-Method Studies" that conducted at University of Valladolid (Spain), (n=116) and found that; 80% of their nursing students had good evaluation regarding the course constructed.

**Concerning to the studied students regarding their total evaluation of the mobile learning application using flipped classroom method**, the current study showed that; majority of the studied students had good total evaluation of the program and the few of them had poor total evaluation of the mobile learning application using flipped classroom method. These findings were inconsistent with *Baharum et al. (2020)*, they studied "Mobile Learning Application: Flipped Classroom", conducted in Indonesian, (n=10) and reported that all 10 participants gave positive feedback about flipped learning and revealed that the participants believed that flipped learning will enhance the students' performance. **From the researcher point of view**, these findings might be due to the mobile learning application using flipped classroom method was suitable for learning needs and also gave opportunities and time for more practices using

critical thinking and problem solving for different situations.

### **Conclusion**

**Based on the results of the present study and answering of research hypotheses, the following can be concluded:**

Application of electronic based learning had positive effect on the attitudes of Community Health Nursing students and also helped them to have evaluation of the mobile learning application using flipped classroom method as good.

### **Recommendations**

- Implementing of new learning strategies to be used in both theoretical and clinical curriculums.
- Further studies to evaluate the effect of mobile learning using flipped classroom method based on electronic learning on nursing students' practical skills and attitudes on other subjects in different academic years.

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