Assessment of Nursing Students` Self-efficacy toward Using Electronic Learning

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Abstract

Background: Electronic learning enables students to engage with educators more readily, fostering a less formal learning atmosphere than traditional classroom settings. This mode of learning offers greater flexibility compared to conventional methods, as e-learning materials are more accessible at any time and place. Students' self-efficacy plays a significant role in influencing their perceptions, thoughts, and actions toward e-learning. **Aim:** This study aimed to assess the level of nursing students` self-efficacy toward using e-learning. **Research design:** A descriptive exploratory design was used. **Setting:** The study was conducted in faculty of nursing at Al-Azhar University. **Subjects:** 376 nursing students from second, third and fourth years in faculty of nursing of the above mentioned setting were included in the study. **Tools of data collection:** Data were collected by using two tools, Students demographic, equipment support and technical data form and self-efficacy questionnaire. **Results:** 27.4% of studied nursing students had high-self efficacy, 50.3% of them had average self- efficacy toward using e-learning and 22.3% of them had low self-efficacy toward using e-learning. **Conclusion:** There was highly a statistical significant relation between the studied nursing students' total self-efficacy level toward using e-learning and their demographic data at p< 0.001[**]. **Recommendations:** Ongoing educating the academic nursing students about how to use e-learning platforms to transform them into the future through various media as well as the faculty members to help them become more knowledgeable and skilled.

Keywords: Electronic learning, self-efficacy

Introduction

Education plays a crucial role in the development and progress of a nation (**Titie et al., 2018**). It serves as a system that fosters relationships between institutions and different countries (**Elumalai et al., 2020**). E-learning represents a major advancement in the education of healthcare professionals. In nursing education, the learning environment is extensively studied to develop the skills needed for nursing practice (**Rouleau et al., 2019**). Since nurses need current information on diseases, medications, and skills, e-learning proves to be highly advantageous for nursing practice (**Kadioglu et al., 2020**).

E-learning is described as an educational approach that leverages communication and information technology to facilitate learning, providing students with access to all necessary educational programs (**Regmi & Jones, 2020**).

It involves learning activities that take place in either synchronous or asynchronous formats, utilizing various digital devices such as desktops, laptops, and mobile devices with internet connectivity. This mode of learning can make educational processes more student-centered, innovative, and flexible (**Singh & Thurman, 2019**). The advantages of e-learning tools for nursing students are well-documented (**Pront et al., 2018**).

As a result, the 'digitalization' of education has been initiated, accompanied by virtual management and digital skills development (**Purnama et al., 2021**). The success of e-learning hinges on positive attitudes toward digital learning and proficiency with technology (**Aljaber, 2018**). According to North Carolina's e-learning initiative, e-learning courses or programs are typically conducted online. This form of learning takes place over networks of computers and telecommunication devices (**Abramson et al., 2020**). E-learning encompasses any type of

education delivered via the internet through websites, applications, or learning platforms **(Conex, 2020).**

E-learning offers a variety of activities, including videos, recorded lectures, live Q&A sessions, quizzes, e-books, and e-journals. Its effectiveness relies on students' willingness to embrace technology, their readiness for it, the quality of the internet, their experience with using the technology, and their ability to navigate any challenges with the teaching tools. **(Kim, 2020).**

Self-efficacy has been derived from Bandura theory; it refers to an ability to perform a specific activity and an expectation to be able to perform a given behavior successfully. According to this theory, human success depends on the interaction among individual behaviors, personal factors, and environmental Conditions. Self-efficacy boosts the learning strategies of nursing students, particularly in tasks requiring self-regulation, and is linked to expected academic progress. It is regarded as a crucial element for academic success **(Pitkänen et al., 2018; Cahyani & Winata, 2020).**

Students who possess greater self-efficacy are more likely to embrace e-learning systems. Self-efficacy refers to one's belief in their capability to perform tasks. In the context of e-learning, self-efficacy is described as an individual's belief in their ability to effectively engage with educational content through e-learning platforms. Engaging in electronic learning demands a high degree of digital literacy, along with the knowledge and skills to utilize various digital tools required for interaction and communication within e-learning environments. Students' confidence in their e-learning abilities is a crucial aspect of their overall e-learning competencies **(Udin et al., 2022).**

Self-efficacy plays a crucial role in learning environments. Because gaps in knowledge and skills can impede e-learning, students' self-efficacy in e-learning is essential for assessing their readiness for online education (Sun & Rogers, 2021). Self-efficacy affects academic performance in both e-learning and traditional face-to-face learning settings. The significant influence of academic self-efficacy on academic performance stems from the fact that students with high self-efficacy are less likely to procrastinate academically **(Li et al., 2020; Khotimatussannah et al., 2021).**

Significance of the study:

Electronic learning was initially introduced in the mid-1970s **(Harasim, 2017)** and was seen as a pioneering endeavor at that time. Over the past 50 years, technology has advanced rapidly, requiring educational institutions to adapt accordingly. E-learning has revolutionized the delivery of education to students. Its flexibility makes learning more accessible, efficient, effective, and beneficial for students.

The Ministry of Higher Education in Egypt has been compelled to implement e-learning to ensure the continuity of the education system (Sintema, 2020). Consequently, educational institutions, including nursing colleges, have adopted e-learning to maintain a seamless teaching and learning process. Nursing faculties must address students' self-efficacy in e-learning, focusing on efforts to enhance their educational experience **(Sasmal & Roy, 2021).**

Nursing students have unique requirements and expectations, and their interactions with online learning modalities differ. Despite the benefits of e-learning, it still encounters barriers and challenges that hinder the success of e-learning programs **(Al-Fraihat et al., 2017).** Therefore, identifying nursing students' self-efficacy toward e-learning could positively impact their outcomes and benefit the faculty overall. Additionally, it could help address the challenges associated with e-learning **(Bagshaw, 2020).**

So far, the effectiveness of e-learning has only been reviewed from a technical point of view, there have not been many studies on the success of e-learning in terms of students' self-efficacy **(Udin et al., 2022).** Hopefully, this study will provide insight into the studied variables that should be taken into consideration to enhance the effectiveness of e-

learning, maximize students' existing technological capabilities, improve the quality of education, and consequently improve students' outcomes.

Aim of the study

This study aimed to assess the level of nursing students' self-efficacy toward using electronic learning.

Research Questions

This study would answer the following question:

What is the level of nursing students' self-efficacy toward using electronic learning?

Subjects And Methods

The study portrayed under the four main designs as follows:
　　I. Technical design.
　　II. Operational design.
　　III. Administrative design.
　　IV. Statistical design.

1.TECHNICAL DESIGN

The technical design included study design, research setting, research subjects and tools used for data collection.

Research Design:

A descriptive exploratory design was utilized to perform the present study. A descriptive design is defined as a description of new situations, events, or concepts, examining relationships among variables. It is concerned with the description of a phenomenon of interest and focuses on the characteristics of a single group or population without trying to make inferences. Exploratory research is a methodological approach that explores research questions that have not previously been studied in depth. It is often used when the issue being studied is new, or the data collection process is challenging in some way **(Grove & Gray, 2019).**

Setting:

The study was carried out in six nursing departments (Medical-Surgical, Pediatric, Obstetric, Community, Psychiatry, and Administration) at the Faculty of Nursing of Al-Azhar University, Cairo Governorate, Egypt. It was chosen because it is where the investigator works, ensuring the availability of samples and suitability for data collection.

Subjects:

A convenience sample of all available nursing students during the academic year 2022- 2023 with different educational years (second, third and fourth years) from the above mentioned departments who utilized e-learning through their nursing studies was recruited in this study. Data collection was started from the beginning of April 2023 to the end of June 2023. Nursing students in first academic year were excluded because they didn`t had any experiences regarding using e-learning in nursing curriculum.

The sample size was 376 nursing students who calculated based on the number of students in each academic year which included (The medical surgical department included 105 students in the second academic year, the third academic year included 58 nursing students in pediatric department and 58 nursing students in Obstetric department, the fourth academic year included 78 nursing students in Community department and 77 nursing students in Psychiatry department).

Tools for data collection

The tools consisted of the following:

Tool I: Students demographic, equipment support and technical data form: It was prepared based on related and recent literature reviews **(Sasmal & Roy, 2021; Mohammed et al., 2023; Sánchez & Karaksha, 2023)** to evaluate the needs of students with e-learning. It included three parts as follows:

Part 1: Students' demographic data: This part was used to assess students' demographic

information and consisted of 4 questions, including age, academic year, family monthly income, and residency.

Part 2: Students' equipment support data: It was used to assess students' equipment support data and consisted of 9 multiple choice questions as types of internet connectivity do you have, the quality of your internet connection, percentage of commitment to attending an online class, percentage of the interaction during online classes etc..…and 5 questions (yes or no response) as using your own computer/ laptop, using computer before starting online classes etc..… if the answer response options were yes took 1 score & no took zero score.

Part 3: Students' technical requirements: It was used to assess students' technical requirements and consisted of (4 questions) including availability of computer or mobile phone, internet access and use e- learning tools to communicate with faculty. The answer response options were either yes took 1 score or no took zero score.

Tool II: Students' self-efficacy questionnaire: It was standardized tool adopted from **Zimmerman & Kulikowich, (2016).** It was used to assess nursing students' self-efficacy toward using e-learning and consisted of 22 statements. **It included the following three components:** online environment (10 items), time management (5 items) and technology use (7 items).

Scoring system: The students were provided response options for each item using a 5-point Likert scale ranging from 5 (strongly agree) to 1 (strongly disagree). This tool included 22 statements. The total score for self-efficacy statements ranged from 22 to 110 grades. It was categorized as follows: low self-efficacy <50% (score 22 - <55), average self-efficacy 50-80% (score 55-88), high self-efficacy >80% (score > 88-110).

II. OPERATIONAL DESIGN

The operational design for this study included the preparatory phase, content validity of the developed tool, pilot study, and field work.

A- Preparatory phase:

This phase involved developing tools for data collection after reviewing recent and related literature, gaining theoretical knowledge from various sources such as books, articles, and periodicals, and obtaining expert opinions to ensure the content validity and reliability of the study tools.

B- Tools validity and reliability

Five experts from medical surgical nursing departments at Ain Shams University (one professor, three associate professors, and one lecturer) examined the face and content validity of the redesigned tools. For clarity, relevance, thoroughness, comprehension, and applicability, the tools were evaluated by experts; minor adjustments were made.

The following internal consistency of the tools utilized in the current study was measured by using Alpha Cronbach's test to examine the reliability of the instruments: The second tool's score (the students' self-efficacy questionnaire) was 0.814.

Pilot Study:

A pilot study comprising 38 nursing students from three separate academic years—the second, third, and fourth—was carried out on 10% of the individuals (15). Students who participated in the pilot study were included in the current study, and minor adjustments were made for the study instruments' final production.

Ethical Considerations

The ethical research considerations in this study included the following:

1. The research approval was obtained from the ethical committee in the Faculty of Nursing Ain Shams University before initiating the study work.

2. The investigator introduced herself for the study subjects.

3. The investigator assured maintaining anonymity and confidentiality of subjects` data. The investigator clarified the objectives and aim of the study to nursing students included in the study.

4. The investigator assured maintaining anonymity and confidentiality of subject's data. Nursing students were informed that they allowed choosing to participate or not in the study and they had the right to withdraw from the study at any time.

5. Nursing students were informed that they allowed choosing to participate or withdraw from the study at any time.

E- Field Work

▪ After securing the official approvals for conducting the study. The investigator explained each head of different nursing departments the purpose of the study for determining as well as arranging suitable time for collecting the data according to the stated nursing theoretical time table schedule that was held in the hall for the students in each year.

▪ The nursing theoretical lectures for students in medical surgical, obstetric and pediatric departments held on Tuesday while students in Community, Psychiatry and Administration departments on Sunday. The investigator visited one department each week.

▪ The investigator introduced herself to nursing students and explained the study's aim to gain their trust and obtain oral consent to participate in the study. Firstly, the investigator distributed the data collection tools to nursing students namely demographic, equipment support and technical data form (tool 1), the time needed for filling this tool was 15 minutes by every nursing student and nursing students' self-efficacy questionnaire (tool 2), the time needed for filling this tool was 15 minutes by every nursing student. The time

needed for completing all study tools was about 30 minutes.

▪ After that, the investigator rearranged another preset time and matched with assigned day of nursing theoretical time table in the next month by coordination with head of each department for any absent student to fill in the data collection tools. Either individually or in the small groups to cover all the students according to the assigned attendance list in each academic year of the included nursing departments that was consistent with recruited sample size. So, the data collection took about three months from the beginning of April 2023 to the end of June 2023.

III. ADMINISTRATIVE DESIGN

An official approval letter to carry out this study was obtained from the dean of the Faculty of Nursing Ain Shams University to directors of the Faculty of Nursing Al-Azhar University in which the study was conducted. The official Permission included the aim of the study, tools of data collection and characteristics of the study subjects.

IV. STATISTICAL DESIGN

Following collection, coding, and entry into an appropriate Excel sheet, the data were entered. The statistical package for social science, version 22, received the transferred data. A comparison was made using the X2 test, and quantitative data were displayed as mean and standard deviation. A percentage was used to display the qualitative data. Following were the considerations made regarding the observed differences and association:

- Non-significant at $P > 0.05$
- Significant at $P \leq 0.05$
- Highly significant at $P < 0.001$

Result

Table (1): Shows that 54.8% of studied nursing students their age ranged between 21-23 years with mean age± SD 20.36±0.99 and 41.0% of them were in the fourth academic year. While, 80.6% of them had moderate family

income and 60.9% of them were from rural residence.

Table (2): illustrates that; percentage of studied nursing students neutral agreement regarding online environment was ranged between 26.3% - 59.3% versus percentage of their disagreement was ranged between 10.4% - 43.9%.

Table (3): represents that; percentage of studied nursing students neutral agreement regarding time management was ranged between 31.9% - 51.1% versus percentage of their disagreement was ranged between 5.9% - 16.0%.

Table (4): shows that; percentage of studied nursing students agreement regarding technology use was ranged between 55.3% - 66.5% versus percentage of their disagreement was ranged between 3.2% - 10.1%.

Figure (1): represents that; 50.3% of the studied nursing students had average self-efficacy level, 27.4% of them had high-self efficacy level and 22.3% of them had low self-efficacy level toward using e-learning.

Table (5): reveals that; there was a statistical significant relation between total level of the studied nursing students' self-efficacy toward using e-learning and demographic data including age and academic year at $P \leq 0.001$** family monthly income and place of residence at $p \leq 0.05$*.

Table (1): Demographic characteristics among the studied nursing students toward using electronic learning.

Demographic data	No.	%
Age (years)		
18-19 years	97	25.8
19-20 years	73	19.4
21-23 years	206	54.8
Mean±SD	20.36±0.99	
Current academic year		
Second	105	27.9
Third	117	31.1
Fourth	154	41.0
Family monthly income level		
Low	48	12.8
Moderate	303	80.6
High	25	6.6
Residence		
Urban	147	39.1
Rural	229	60.9

Table (2): Number and percentage distribution of the studied nursing students` self-efficacy regarding online environment component toward using electronic learning (n=376).

| Online environment component items	Nursing student's self -efficacy level									
	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Navigate online course materials efficiently.	8	2.1	59	15.7	223	59.3	67	17.8	19	5.1
Find the course syllabus online.	9	2.4	59	15.7	163	43.4	123	32.7	22	5.9
Communicate effectively with my instructor via e-mail.	8	2.1	58	15.4	196	52.1	93	24.7	21	5.6
Communicate effectively with technical support via e-mail, telephone, or live online chat.	6	1.6	39	10.4	205	54.5	102	27.1	24	6.4
Submit assignments to an online drop box	10	2.7	46	12.2	178	47.3	121	32.2	21	5.6
Overcome technical difficulties on my own.	10	2.7	165	43.9	99	26.3	82	21.8	20	5.3
Navigate the online grade book.	21	5.6	137	36.4	108	28.7	72	19.1	38	10.1
Learn without being in the same room with the instructor.	26	6.9	129	34.3	114	30.3	82	21.8	25	6.6
Learn without being in the same room as other students.	15	4.0	66	17.6	184	48.9	90	23.9	21	5.6
Learn to use a new type of technology efficiently.	4	1.1	65	17.3	190	50.5	97	25.8	20	5.3
Total	12	3.2	82	21.8	166	44.1	93	24.7	23	6.1

Table (3): Number and percentage distribution of the studied nursing students` self-efficacy regarding time management component toward using electronic learning (n=376).

Time management component items	Nursing student's self-efficacy level									
	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Manage time effectively	10	2.7	44	11.7	192	51.1	104	27.7	26	6.9
Complete all assignments on time	3	.8	60	16.0	160	42.6	119	31.6	34	9.0
Meet deadlines with very few reminders.	10	2.7	47	12.5	167	44.4	117	31.1	35	9.3
Develop and follow a plan for completing all required work on time.	5	1.3	50	13.3	163	43.4	119	31.6	39	10.4
Communicate using asynchronous technologies (Discussion boards, e-mail, etc.)	12	3.2	22	5.9	120	31.9	190	50.5	32	8.5
Total	8	2.1	45	12.0	160	42.6	130	34.6	33	8.8

Table (4): Number and percentage distribution of the studied nursing students` self-efficacy level regarding technology use component toward using electronic learning (n=376).

Technology use component items	Nursing student's self-efficacy level									
	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
Search the Internet to find the answer to a course-related question	6	1.6	15	4.0	87	23.1	243	64.6	25	6.6
Complete a group project entirely online.	5	1.3	17	4.5	99	26.3	223	59.3	32	8.5
Use synchronous technology to communicate with others (such as telegram).	7	1.9	12	3.2	74	19.7	234	62.2	49	13.0
Focus on schoolwork when faced with distractions.	9	2.4	22	5.9	98	26.1	208	55.3	39	10.4
Search the online course materials.	9	2.4	14	3.7	61	16.2	250	66.5	42	11.2
Use the library's online resources efficiently.	13	3.5	14	3.7	69	18.4	219	58.2	61	16.2
When a problem arises, promptly ask questions in the appropriate forum (email, discussion board, etc.)	13	3.5	38	10.1	57	15.2	229	60.9	39	10.4
Total	9	2.4	19	5.1	78	20.7	229	60.9	41	10.9

Figure (2): Students self-efficacy total level toward using e-learning

Students self-efficacy total level toward using e-learning

- Low self-efficacy <50% : 22.3%
- Average self-efficacy 50-80 % : 50.3
- High self-efficacy >80 % : 27.4%
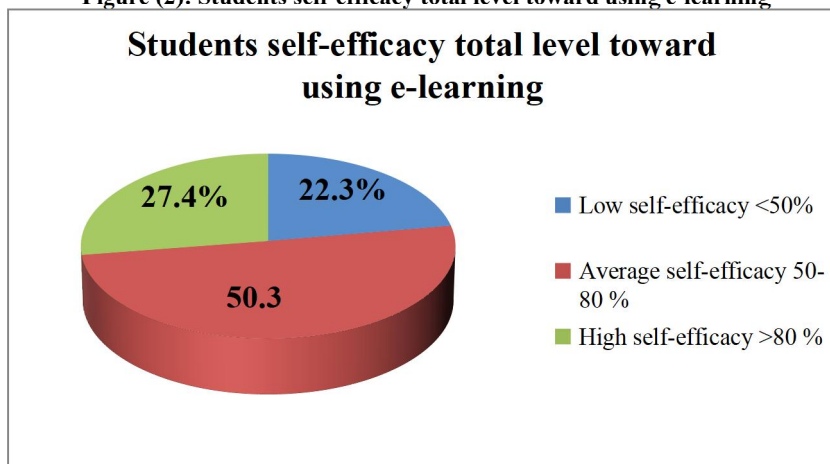
Table (5): Relation between the studied nursing students' total level of self-efficacy toward using electronic learning and their demographic data (n =376).

Demographic data	Students self-efficacy total level toward using e-learning						Test of significance	
	Low self-efficacy *(n=84)*		Average self-efficacy *(n=189)*		High self-efficacy *(n=103)*			
	No.	%	No.	%	No.	%	x2	p-value
Age (years)								
18-19 years	13	13.4%	71	73.2%	13	13.4%	39.433	<0.001**
>19-20 years	21	28.8%	19	26.0%	33	45.2%		
>21-23 years	50	24.3%	99	48.1%	57	27.7%		
Academic year								
Second	36	34.3%	59	59.2%	10	9.5%	107.288	<0.001**
Third	28	23.9%	61	52.1%	28	23.9%		
Fourth	20	13.0%	69	44.8%	65	42.2%		
Family monthly income level:								
Low	10	20.8%	27	56.3%	11	22.9%	14.928	0.005*
Moderate	70	23.1%	156	51.5%	77	25.4%		
High	4	16.0%	6	24.0%	15	60.0%		
Residence:								
Urban	30	15.2%	59	29.9%	58	29.4%	10.004	0.007*
Rural	54	23.6%	130	56.8%	45	19.7%		

*On highly significant p-value <0.001***

Discussion

Healthcare educators have positioned electronic learning as a significant advance in the field of healthcare professional education. One of the environments that is examined the most in relation to nursing education in order to build the skills necessary to carry out competences connected to nursing care practice is the academic setting. Electronic learning refers to a training approach that utilizes the internet or a network and consists of instructions delivered by electronic media systems **(Rouleau et al., 2019).**

The current study's results regarding the demographic characteristics of the studied nursing students showed that, on average, they ranged in age from 21 to 23 years old, with a mean age of 20.36±0.99. The investigators believe this is because the university age in Egypt is between 19 and 23 years old. According to **Sasmal & Roy's (2021)** study, "Perception of undergraduate nursing students regarding e-learning during COVID-19 pandemic in West Bengal," over two thirds of the nursing students under study were between

the ages of 21 and 23. This finding is consistent with their findings.

This finding, however, conflicts with a study by **Mohammed et al. (2021)** titled "Correlation between perception and psychological challenges toward E-learning among faculty of nursing students at Assiut University, in Egypt," which found that fewer than two thirds of the nursing students under study were between the ages of 18 and 21. The findings of **AbdEl-Aziz et al.** study, "Effect of educational program on the psychological challenges of electronic learning among university nursing students: A quasi-experimental, in Egypt," from 2023, which discovered that less than two thirds of the nursing students under study are between the ages of 18 and 20, also contradict this result.

Regarding the current academic year, the survey's findings revealed that 25% of the nursing students under investigation were in their fourth year of study. According to the investigator, this indicated that there were more students enrolled in their fourth year, which may have resulted from some of them dropping out of earlier academic years. The findings of **Kaliyaperumal & Raman's (2022)** study,

"Satisfaction and comfort towards E-learning among nursing students, in Kingdom of Saudi Arabia," show that a majority of the nursing students under study were in their third year of study. This finding contradicts their findings.

The results of the current study indicated that most nursing students under investigation had family incomes that were moderate on a monthly basis. According to the investigator, this might be because most Egyptians have moderate monthly incomes, which have an impact on their family's social class. The study conducted by **Zhang et al. (2023)** titled "The impact of electronic education on nursing students course performance in a sino-foreign cooperative program during the onset of COVID-19: A quasi-experimental study, in China" provides support for this finding. The study revealed that less than three quarters of the nursing students under study were from medium-income families.

Furthermore, **Sögüt et al.'s (2022)** study, "The relationship between E-health literacy and self-efficacy levels in nursing students receiving electronic education during the COVID-19 pandemic, in Turkey," which showed that more than two thirds of the students in the study had median family income levels, concurs with this finding.

Regarding residency, the current study revealed that, from the perspective of the investigator, three-fifths of the nursing students under study were from rural areas. This finding may be related to the requirement that, as the only nursing college affiliated with Al-Azhar University in Egypt, students with the furthest residence from the faculty join it in accordance with their geographic distribution in Egypt. The findings of the study "Behavioral intention to use E-learning and its associated factors among health science students in Mettu University, in southwest Ethiopia" by **Hunde et al. (2023)** which revealed that over half of the nursing students under study were from rural areas, are in agreement with this conclusion.

But this current result contradicts a study by **Yousif & Ezzat (2023)** titled "Maternity students' perception of electronic lab education environment based on Dundee Ready Education Environment Measure (DREEM) Questionnaire, in Egypt," which found that most of the nursing students under study lived in urban areas.

More than one-third of the nursing students in the survey agreed that the course syllabus is available online, indicating that students feel more confident in their ability to learn in an online setting. This could be because the syllabus should be easily accessible and made for recurring review, giving students quick and simple access to the knowledge they require. The results of the study "Perceptions of first- and second-years medical students about E-learning versus face-to-face learning in human anatomy integrated course, in Egypt" by **Husseiny et al. (2023)** were consistent with this finding, as they showed that over 33% of the students in the study said they had found the course syllabus online. Furthermore, the results of this study concur with those of **Diab & Elgahsh (2020),** who discovered that over half of the students said they had discovered the course syllabus online.

According to the current study, over half of the nursing students who were studied agreed that it is difficult to navigate online course materials effectively. This finding related to students' self-efficacy about online environment items, namely online course materials, was noted. This could be because, in the design and development of e-learning, navigation is one of the most crucial components. An online course's ability to give learners with a positive User Experience can be determined by its navigation.

The research results presented here are consistent with those of a study conducted in 2023 by **Bassiouni et al.**, "Barriers to e-learning during COVID-19 outbreak as perceived by nursing students at the faculty of nursing-Alexandria University, in Egypt," which found that the majority of the nursing students in the study were able to successfully complete the online course.

Furthermore, the results of this study concur with those of **Mohammed et al. (2023)** study, which revealedthat the majority of the participants in the study said they had no trouble navigating the online course.

The current study found that, with regard to students' self-efficacy about things from the online environment, less than half of the nursing students under consideration disagreed that they could solve technical issues on their own. This could be the result of unanticipated equipment issues, such as hardware malfunctions or software defects, which make it difficult or impossible to carry out a desired task. This research's findings are consistent with a study conducted in 2021 by Tiwari & Srivastava titled "Self-efficacy of electronic learning among nursing students during COVID-19 pandemic, in India," which showed that fewer than half of the participants said they were able to resolve technical issues on their own.

The present findings are at odds with a study conducted in 2021 by **Abd-Elhamed et al.** under the title "Comparison study between traditional, electronic and hybrid teaching strategies among obstetrics nursing students regarding to perception, satisfaction, academic stress, and self-efficacy during the epidemic COVID-19, in Egypt." The study revealed that a minority of the students under investigation felt that they were able to overcome technical challenges on their own.

The current study found that, with regard to nursing students' self-efficacy about time management items, namely communication utilizing asynchronous technologies, slightly more than half of the students agreed (Discussion boards, e-mail, etc.). This could be because effective time management involves planning ahead and wisely dividing up one's time between various tasks. This allows people to set priorities, set deadlines, lower stress levels, and eventually achieve their goals.

The present study's findings were supported by **Anas (2020),** who noted in her study "Perceptions of Saudi students to electronic learning environments at the University of Bisha, in Saudi Arabia" that the majority of the students in the study had a similar understanding of asynchronous technology utilization for communication. **Algahtani et al. (2020)** also corroborate the findings of this study, finding that nearly half of the students in question agreed that asynchronous technologies were a good way to communicate.

More than half of the students in the current study expressed neutral agreement with the statements made on nursing students' self-efficacy regarding time management, specifically managing time effectively. The results of this study are consistent with those of **Aamer & Farrag's (2023)** study, "Developing and testing psychometric properties of "readiness for e-learning scale" among a sample of Egyptian university students, in Egypt," which noted that over two thirds of the students in the study agreed that they were efficient time managers.

Although the results of this study are contradicted by **Lubanska et al.'s (2023)** study, "E-learning and research experience exchange in the online setting of student peer mentor network during COVID-19 pandemic and beyond: A laboratory case study, in USA," which showed that most of the studied students said they weren't managing their time effectively.

This study revealed that less than half of the nursing students surveyed disagreed with their level of self-efficacy with regard to time management, specifically finishing all assignments on time. This could be because studying nursing students is a task that demands an excessive amount of perfectionism. According to **Panchabhai's (2021)** study, "Pandemic and students perception about electronic teaching & learning, in Nagpur," less than half of the students in the study strongly disputed that the assignments were easy to complete. The study's findings are consistent with this finding.

This study's findings, however, conflict with those of **Elzainy et al. (2020),** who found that over half of the students in their study

strongly agreed that the assignments were simple to complete during the COVID-19 pandemic at the College of Medicine in Saudi Arabia.

According to the current study, less than half of the nursing students who were surveyed strongly agreed with the statement on their level of self-efficacy regarding technology use, specifically using the library's online resources efficiently. The primary benefit of utilizing library resources for pupils might be their ability to obtain dependable and respectable sources of knowledge pertinent to their research subjects. According to **Okuonghae et al.** study from 2022, "Technological readiness and computer self-efficacy as predictors of E-learning adoption by LIS students in Nigeria," more than half of the students in that study agreed that they could use the online resources of the library effectively. This finding contradicts the findings of the current study.

Moreover, the findings of this study are not corroborated by **Bankole, (2022)** in "Perceptions towards adoption of electronic learning under COVID-19 pandemic among library and information science students, in Nigeria," wherein the majority of the studied students expressed disagreement regarding the effective use of the library's online resources.

About two thirds of the students in the current study agreed with the findings on the nursing students' self-efficacy regarding technology use, specifically browsing the online course materials. This may be because conducting research online has several benefits for the researcher, such as better access to delicate topics and vulnerable groups that are concealed, shorter data entry times, and improved data accuracy.

The results of this study are consistent with those of a study by **Subashini et al. (2022)** titled "Undergraduate perceptions on transitioning into E-learning for continuation of higher education during the COVID pandemic in a developing country: A cross-sectional study from Sri Lanka," which discovered that over two thirds of the students in the study

agreed that exploring the online course materials was important.

Additionally, **Johnson et al. (2021)** study, "Attitudes and awareness of regional Pacific Island students towards e-learning, in Australia," which noted that more than half of the studied students agreed about searching the online course materials, supports the findings of this study.

The current study found that more than 25% of nursing students had neutral agreement with the statement that the students' self-efficacy regarding technology use items, namely doing a group project totally online, was high. This may be as a result of the fact that group projects teach pupils skills relevant to teamwork. More than 25% of the participating students reported that they were finishing a group project entirely online. This study's findings are consistent with those of **Coman et al. (2020)** in their study "Electronic teaching and learning in higher education during the coronavirus pandemic: Students' perspective, in Romania."

This study's findings also align with those of **Hasan & Bao (2020),** who found that over one-third of the participants were finishing a group project in its entirety. Their study, "Impact of "E-Learning crack-up" perception on psychological distress among college students during COVID-19 pandemic: A mediating role of "fear of academic year loss", in China," examined this relationship.

Regarding the nursing students' confidence in their ability to use technology, in particular, when an issue emerges, quickly raise inquiries in the relevant forum (email, discussion board, etc.) The current study found that a small percentage of the nursing students under investigation disagreed. This might be the result of teachers having a lot more work to do at every level of e-learning.

The findings of this study are inconsistent conflict with those of **Amin et al. (2022)** investigation, "What influences E-Learning effectiveness among tourism education students? An empirical assessment conducted

during COVID-19 in Egypt" revealed that over half of the students under study concurred that they should swiftly express inquiries in the proper forum when an issue arises.

Furthermore, this study's findings are consistent with **Wu (2021)** trial, "Student engagement in E-learning: An investigation of undergraduates in Universiti Tunku Abdul Rahman during COVID-19 pandemic, in Malaysia," which found that over one-third of the students in the study agreed to promptly ask questions in the appropriate forum when a problem arises.

Regarding the overall level of self-efficacy of the nursing students under research, the current study's findings indicated that over 25% of the students had high levels of self-efficacy, over 50% had moderate levels, and fewer than 25% had poor levels. This could be because e-learning modifies the way that lecturers and students interact, demands a great deal of motivation and self-control from students, provides new avenues for students to express themselves creatively, and has a lot of potential for implementing new ideas and projects as well as for personal growth and applying continuing education principles.

The findings of this study are consistent with those of Tarek et al.'s (2023) study, "Nursing students' perception regarding electronic learning and its relation to their academic satisfaction, in Egypt," which stated that over 25% of the students in the study had high self-efficacy and over 2/3 had moderate self-efficacy regarding e-learning. However, 5% of them felt that they were not very effective at learning online.

On contrary, the results of this study contradict those of **Darweesh & Khalil's (2020)** study, "Critical care nursing students' acceptance of unplanned switch to e-learning during COVID-19 pandemic, in Egypt," which showed that more than half of the nursing students in the study had high self-efficacy regarding e-learning, less than one third had moderate self-efficacy, and less than one fifth had low self-efficacy regarding e-learning.

The relationship between the demographic characteristics of the students and their overall degree of self-efficacy in using e-learning was found to be statistically significant at $p \leq 0.001**$, according to the current study. According to the investigator, this data suggests that a student's sociodemographic characteristics had an impact on their level of self-efficacy. For example, students who were older, had a higher academic year, had a higher monthly family income, and resided in an urban region were found to have higher levels of self-efficacy, and vice versa. Thus, identifying these elements can be crucial to raising the academic performance of the pupils under study. The findings of the present study are consistent with those of **Adawiya et al. (2023),** who examined the relationships between achievement and students' self-efficacy in electronic education in Indonesia. Their findings indicated a statistically significant relationship between the overall level of students' self-efficacy and every item of their sociodemographic data.

Conclusion

In the light of the current study findings, it can be concluded that, more than one quarter of the studied nursing students had high-self efficacy, more than one half of them had average self- efficacy toward using e-learning and less than one third of them had low self-efficacy toward using e-learning. Also, there was highly a statistical significant relation between the studied nursing students' total self-efficacy and using e-learning.

Recommendations

Ongoing educating the academic nursing students about how to use e-learning platforms to transform them into the future through various media as well as the faculty members to help them become more knowledgeable and skilled.

Engaging on Webinars for summer courses to enhance e-learning using adaptation for both faculty members and students.

- Continuous training students on the use of e-library to achieve best results toward using e-learning.

- Collaborating the ministry of higher education with telecommunication companies to provide affordable and equitable internet services of using e-learning for all students.

- Decreasing the time of e-lectures with increasing professor-student interactions to mitigate students' inattention toward using e-learning.

- The attention span of students during using e-learning and the professor–student interaction may be investigated in future studies.

- Additional studies should be conducted to investigate faculty members' attitudes and perceptions of using e-learning as well as implementation difficulties that could affect positively or negatively on the students toward using e-learning.

- Future study is recommended to evaluate the effect of using e-learning on the academic achievement of nursing students.

- Further study is needed to assess students' opinion regarding critical factors affecting their engagement or acceptance of using e-learning.

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