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## **The effect of blended learning of the maternity course on academic student's achievements and satisfaction**

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**Abstract**--Background: Blended learning is an advanced model that encompasses the advantages of both traditional teaching in the classroom, Information and Communication Technology supported learning. Blended learning requires rigorous efforts, right attitude, handsome budget and highly motivated teachers and students for its successful implementation. Aim: To assess the nursing students' achievements and satisfaction toward blended learning. Design: A descriptive study design. Setting: Faculty of nursing, Fayoum University. Sample: Convenience sample of 170 nursing student at third level maternity department. Tools: three tools were used to collect study data, structured interviewing questionnaire, Academic achievement form and Student Satisfaction questionnaire. Results: More than half of studied students were female, more than three quarter of them uses smart phones, more than half of students have high achievement score is excellent, majority of students were satisfied with blended learning. There were highly statistically significant between total satisfaction, total achievement and statistically significant between demographic characteristics, achievement and satisfaction. Conclusion: more than half of students with high total achievement score are excellent, about sixty percent were satisfied toward blended learning, and also, there is highly statistically significant between total satisfaction and total achievement. Recommendation: Involve blended learning as alternative plan at the time of crisis. Both teachers and students require a

specialized training programs to use computers and the internet and faculty management should take serious steps to facilitate the development of teachers' and students' information technology skills.

**Keywords**---effect blended learning, maternity course, academic student's achievements, satisfaction.

## Introduction

The introduction of various information and distance technologies in the learning process continues to be relevant. Modern education has changed significantly under the influence of digital solutions that penetrate into it everywhere; previously impossible forms of organization of the educational process become popular (Mukhanov, Bogdanov and Mukhanova, 2020).

Yet, the integration of basic science and clinical concepts throughout the curriculum helps students to develop clinical reasoning skills. It also fosters knowledge retention and reinforces the relevance and application of basic sciences to clinical context. On this premise, and with the emphasis on competency-based medical education, educators have had to adopt a learner-centered model using diverse teaching methods to aid effective teaching and learning processes (Venkatesh et al., 2020).

The advent of new technologies has impacted the learning process among students in higher education. The new technologies have been embraced by students and led to the growth and popularity of learning using the internet (Zeqiri, Kareva and Alija, 2020).

Moreover, the educational system has been in a transitional stage in recent years, with the continuous development of information and communication technology. To meet these challenges, the needs of students to embrace emerging technologies and explore new ways of achieving the goal of quality education budgets, lack of facilities and face-to-face contact advantages to abandoning conventional methods of information transfer. So, blended learning instruction in higher education emerges as potentially the most influential form of instruction in education (Dangwal, 2017).

Advancement in science and technology in the current era ushered in many new teaching and learning approaches, such as e-learning and blended learning. The idea of blended learning is garnering increased attention from in the education academia. Also, Blended learning presents an efficient platform for the application of a variety of educational strategies in the digital age and has the potential of combining the best features of face-to-face and online learning support for a flexible method to overall learning and skills improvement (Al-Hyari, 2020).

In addition, blended learning is a combination of traditional teaching methods (face to face) and online teaching based on learning platforms. Learning in the classroom promotes human interaction while online learning allows the learner to plan in time and space their student activities and the pace of learning. However,

it is for the teacher to decide which educational elements should be discussed in the class or online. The philosophy of this learning mode is quite simple: to focus on the advantages of face-to-face and distance education (Tadlaoui and Chekou, 2021).

Often, higher education systems continue to evolve in response to societal and technological changes. An example of this evolution in nursing education is the merging of traditional face-to-face learning systems with educational and communication technology, creating new blended methods to deliver nursing education curriculums. Blended learning eliminates the problem of geographical proximity, leveraging technology to provide an alternative enrollment and content delivery option for students who do not live close to a parent institution (Leidl, Ritchie and Moslemi, 2020).

Also, blended learning allows educators to integrate elements of traditional face-to-face instruction with tailored online learning modalities and is broadly adopted in higher education for varied purposes, using diverse implementation strategies. In undergraduate nursing education, BL can be used to respond to unique learner needs, such as motivation levels, learning styles, and abilities. BL allows students scheduling flexibility, along with opportunities to repeat or review materials as needed, to receive immediate feedback and to participate in individualized knowledge-construction activities (Berga et al, 2021).

While, blended learning is not limited to the use of technology, but rather is a redesign of all the pillars of the educational process, and the restructuring of the role of each of the learner and teacher, and even the educational position as a whole. E-learning, no matter how important it is, cannot replace the place of traditional learning that remains to have the greatest impact, regardless of the variety and change of modern learning methods. Blended learning is based on maximizing the advantages of traditional learning and e-learning to attempt avoiding the downsides of both (Alsarayreh, 2020).

Yet, many researches had proved the effectiveness of blended learning in higher education systems and its efficiency in enhancing the learning experience of traditional methods. They proved that blended learning can provide extra flexibility for traditional learning methods in terms of time and effort (Demaidi, Qamhieh and Afeefi, 2019).

Also, blended learning is currently used in the teaching of undergraduate nursing in the classroom, lab, and clinical environments. Worldwide, numerous studies have been conducted to elucidate the impact of blended learning in nursing education on the students' engagement, satisfaction, and learning outcomes. Most of these studies have indicated that the use of the blended approach improved students' outcomes and increased their levels of satisfaction (Leidl, Ritchie and Moslemi, 2020).

In undergraduate nursing education, BL can be used to respond to unique learner needs, such as motivation levels, learning styles, and abilities. BL allows students scheduling flexibility, along with opportunities to repeat or review materials as needed, to receive immediate feedback, and to participate in

individualized knowledge-construction activities. Further, students in BL appreciate the cost savings, Convenience and ability to work at their own pace. BL has given the frequent need to balance classroom space and class size, and the drive for more flexible learning opportunities (Berga et al ,2021).

Academic achievement refers to the extent to which a student has achieved the short term goals of a course, measured in the scores obtained after a test. Academic achievement is the accomplishments of students that results from study and learning in a schooling system. As it applies to education, academic achievement refers to the attainment of outcomes that are tied to educational experiences. Students are exposed to educational experiences within a given period and then assessed to see the outcomes of such exposure. The results of the assessments are computed and then used as the achievement of the students which may be influenced also by the gender of the students (Bupo and Ibeneme, 2020).

Learning satisfaction refers to the kinds of personal inner feelings of learners in the learning process. The satisfaction and positive feelings are generated by the learning process experienced by the individual in learning activities .It mainly emphasizes the individual's subjective feelings about the content, methods, process, and results of learning activities. In the learning process, if the learning activity meets or exceeds its "expectations", it is considered as "satisfied", otherwise it is considered as "unsatisfied". Satisfactory experience will affect continuous participation in learning activities and increase investment in learning activities ( Huang, 2021).

Student satisfaction with blended learning helps in evaluating the effectiveness of using this form of the class mixture in higher educations. Understanding what method leads to student satisfaction provides an insight into educational institutions to create a more effective learning environment for students. Satisfaction with blended learning can lead to performance improvements for students in certain areas (Zeqiri, Kareva and Alija , 2020).

Also, satisfaction with blended learning represents a key concern for higher education stakeholders; they are becoming an increasingly competitive market. Student satisfaction has become an important component of Quality Assurance and Quality Enhancement ( Al Awamleh , 2020). Students' satisfaction with blended learning plays a crucial role in assessing the effectiveness of the method, and learners' continued use intention of blended learning is also strongly influenced by satisfaction ( Gao, Jiang and Tang, 2020).

### **Significance of the study**

It is crucial to ensure that the role of technology in nursing education is well understood, and preparing nursing students who are competent to work in a technology-driven health environment requires teaching institutions to integrate it effectively into their curriculum (Harerimana & Mtshali, 2020). The role of technology supports the teaching and learning process in this digital age because it can help students to become independent learners. This means that students

can learn everything and anywhere by clicking on many features or platforms on the internet related to the subjects they are learning (Rafiola et al, 2020).

Fully online and blended courses serve a significant population living in remote regions of Canada. Indeed, 83% of Canadian higher-education institutions provide courses with varying degrees of blended mode, aiming to provide access for a diversity of continuing education learners with no additional cost (Lane et al ,2021) Across the 2020/21 academic year, a large majority (88.5%) of UK universities eventually adopted a 'blended-learning' approach, although notably, institutions such as Oxford and Cambridge committed entirely to teaching online (Finlay, Tinnion & Simpson, 2022).

Globally, nursing educational institutions are taking steps forward in redesigning their curricula to align them with modern pedagogy to enhance student-centered learning .This curricular reform is concerned with fulfilling the educational needs of the new technological era, which generates exposure to a variety of information, advanced communication technology, and diverse learning methods (Youhasan etal ,2021).

Scientific and technological advances, including information technology, are characterized by rapid changes in the present time. It is necessary to keep up with those changes in the education system. Because most academic staff just walks into classrooms holding their yellow notebooks inherited from the previous teachers. Their lectures are just sort of a ready-made recipe book to teach scientific concepts. While students in our classrooms today are enclosed with technology and we are arranging them for the jobs that have not yet been created. Otherwise, innovations in science and technology have helping in many new methods of teaching and learning, such as blended learning, particularly in the field of education and self-growth. So faculties must take steps to bridge the gap that prepares students for their future careers by embracing a blended model of learning to help students improve the critical skills of the 21st century (Kassem, Abo Habieb and El-Bastwese, 2020).

### **Aim of the study**

This study aimed to: assess the effect of blended learning of maternity course on academic student's achievement and satisfaction through:

### **This aim was achieved through the following**

- 1- Assess the effect of blended learning of maternity course on student's achievements.
- 2- Assess level of student's satisfaction toward blended learning methods during maternity course.

### **Research design**

The descriptive study was used.

## **Setting**

Study conducted at Faculty of Nursing Fayoum University.

## **Subjects**

Third year students at second semester of Maternal and Neonatal Health Nursing during the academic year 2020-2021 that involved (170 students).

## **Tools of data collection**

### **Three tools were used to collect data of this study as follow**

Tool (1): Structured interviewing questionnaire: was being developed by researcher to assess knowledge of students. It was be include two parts.

Part (1): this part includes questions to assess the socio- demographic characteristics of the student's e.g. (age, gender and residence, etc).

Parts (2): include questions to assess accessibility to information technology (IT) services and modalities of online class.

Tool (2): Academic achievement sheet.

It was a formal sheet to identify students' achievements along the period of study semester. The student achievement sheet was identified by using an average grade scale that was designed as an accumulated form for assessing students' progress in the semester term.

## **Scoring system**

The academic achievement sheet consists of semester work grade, oral, and final exam. Total scores are 200 marks, it contains five categories divided as;

Excellent ( 85:100%),

Very good (75:84%),

Good (65:74%),

Fair (60:64%),

Poor (50:59%),

And very poor (less than 50.%) this categories were classified according to the formal internal law of faculty.

Tool (3): student satisfaction questionnaire this tool was developed by Naaj et al (2012) and adapted by researcher to assess level of students satisfaction and classified into six dimension: interaction (9 items), instruction (13 items), instructor (5 items), evaluation (2 items), course management (3 items), technology (6 items).

## **Scoring system**

This questionnaire with 38 items was a five-point Likert scale, which ranging from (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, and 1 = strongly disagree). Scoring system of satisfaction related to satisfaction of using method of

blended learning was low satisfied (<50%), satisfied (50-70 %) , and high satisfied (>75%).

### **Validity**

The developed tool was be formulated and submitted to five experts in maternity health nursing to assess the content validity, needed modifications were be done.

### **Reliability**

Cranach's Alpha was be used to determine the internal reliability of the too.

### **Ethical considerations**

Each student was informed about the aim of the study at the starting interview and throughout the study. An oral consent was obtained from each student before starting data collection. Confidentiality was ensured throughout the study process where personal data were most disclosed and the students were assured that all data were used for research purpose. The students have the right to withdrawal from the study at any time.

### **Operational item**

The operational design included preparatory phase, pilot study and field work.

#### **Preparatory Phase**

It included reviewing of related literature, and theoretical knowledge of various aspects of the study using books, articles, internet, periodicals and magazines to develop data collection tool.

#### **Pilot study**

It was be carried out with 10% (17) students from the total sample of students present in maternity course to test applicability; clarity and the efficiency of the tools without any modification of the tool, the students who included in the pilot study were included in study sample.

#### **Fieldwork**

- The data were collected from the third year nursing students of maternity department in second semester over a period of three months from the beginning of February 2021 to May 2021 in the academic years 2020-2021.
- The blended learning sections consisted of theoretical part that involved twelve lectures given online during semester for two hours a week through software used for online learning as zoom, Microsoft teams and practical part also given online but its application in faculty lab twice weekly.
- The students of maternity department were divided into two main groups, one of them received online presentation and other group attends to faculty twice

weekly for clinical area then there is another rotation for other group according to maternity department system.

- During first meeting the aim of the study was simply explained to the maternity students who agree to participate in the study prior to any data collection.
- The researcher attended to the study setting two days weekly and distributed all tools as structured interviewing questionnaire and student's satisfaction questionnaire
- The time needed to complete the tools were 20-30 minutes for collecting data from maternity nursing students.
- Student achievement tool was collected by researchers from the control room at the end of the final written exam.
- Total scores are 200 marks, were categories; excellent 85:100%, very good (75:84%), good (65:74%), fair (60:64%), poor (50:59%), and very poor less than 50.%, according to the formal internal law of faculty.
- At the end of the study researcher assess students' achievement and level of satisfaction.

### **Administrative item**

The research approval was be obtained from the deans of faculty of nursing in Helwan University and then from the deans of faculty of nursing Fayoum university.

### **Statistical item**

Statistical presentation and analysis of the present study was conducted, using the mean, standard deviation and chi-square test was used to compare between groups in qualitative data by (*IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.*).

### **Results**

Table (1) distribution of students according to their general demographic characteristics:

	N	%
Age		
20-21	115	67.6
22-23	55	32.4
Mean±SD	21.24±0.78	
Gender		
Male	67	39.4
Female	103	60.6
Residence		
Rural	86	50.6
Urban	84	49.4
Father education level		
University	65	38.2
Secondary	56	32.9

Read and write	36	21.2
not read and write	13	7.6
Mother education level		
University	39	22.9
Secondary	67	39.4
Read and write	33	19.4
not read and write	31	18.2
Fathers job		
Worker	45	26.5
Employee	100	58.8
Farmer	19	11.2
No work	6	3.5
Mothers job		
House wife	126	74.1
Employee	44	25.9
Family income		
Enough income	106	62.4
Not enough income	64	37.6

Table (1) showed that more than half of students (67.6%) aged between 20- 21 years old ,more than half of students are female (60,6%) , more than half of them lived in rural area (50,6%) and about (38,2 %) of their father education level are university level , about (39,4%) of mother education level are secondary level , the main father's job is employee represent (58,8%) ,the main mother's job is house wife represent (74,1%) , more than half of students have enough income (62,4%).

Table (2) distribution of accessibility to information technology (IT) services and modalities of online class

	N	%
Do you Own device to attend class		
Yes	170	100
No	0	0.0
In case of yes, which devices do you use to attend the online classes		
Mobile	164	96.5
Laptop	26	15.3
Tablet	20	11.8
What is the internet service mostly used for online learning		
Wi-Fi	104	61.2
Mobile data	40	23.5
Both	40	23.5
None of the above	8	4.7
What are the software used for online learning		
Zoom	164	96.5
PowerPoint presentation with audio	144	84.7
Microsoft team	10	5.9
Discussion formus	0	0.0

Recorded videos	6	3.5
Others	0	0.0
How many class hours/week		
Less than two hours		
2 hours - 4 hours	19	11.18
4 hours - 6 hours	147	86.47
More than 6 hours	4	2.35
Is there feasibility of class timing		
Yes	36	21.2
No	22	12.9
Not always	112	65.9
What are the resources used for studying other than online class		
Textbook	80	47.1
Pdf/eBooks	102	60.0
Self-made notes	38	22.4
YouTube videos	92	54.1
Traditional lecture	16	9.4
Others	4	2.4

Table (2) showed that all students own device to attend online class (100%) , the main device used for attending online classes is mobile (96,5%) and more than half of students used Wi-Fi (61,2%) for online learning , main software used for online learning is zoom (96,5%) ,the main number of class hours / week 4 hours-6 hours (86,47%) , more than half of students represent that the feasibility of class timing is not always (65,9%) , the main resources used for studying other than online class are pdf/books (60.0%).

Figure (1) distribution of students according to their total achievement score

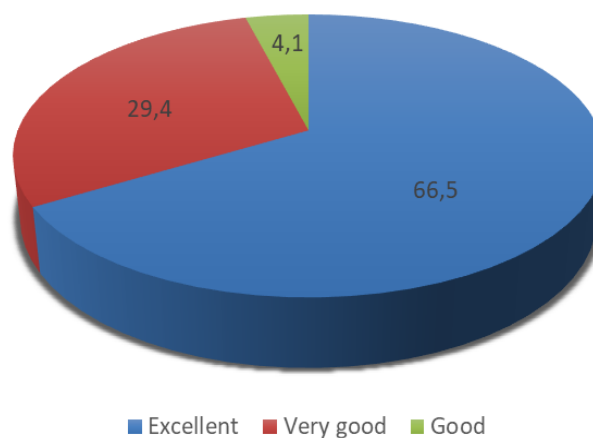


Figure (1) showed that more than half of students with high achievement score is excellent (66.5%)

Table (3) distribution of student's satisfaction regarding interaction in blended learning

Interaction	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	N	%	N	%	N	%	N	%	N	%
A blended learning session keeps me always alert and focused.	23	13.5	64	37.6	59	34.7	15	8.8	9	5.3
Interaction is adequately maintained with the lecturer when he/she is on the other side of the blended learning classroom.	43	25.3	63	37.1	32	18.8	16	9.4	7	4.1
I cannot interrupt the lecturer to ask a question when he/she is on the other side of the blended learning classroom.	42	24.7	72	42.4	34	20.0	17	10.0	2	1.2
A blended learning course makes it more important for students to visit the lecturer during office- hours.	45	26.5	74	43.5	32	18.8	13	7.6	6	3.5
Having students from the opposite gender on the other side of the blended learning classroom listening to what I say might restrict my participation.	40	23.5	63	37.1	42	24.7	18	10.6	7	4.1
I am satisfied with the way I interact with other students.	45	26.5	64	37.6	37	21.8	21	12.4	3	1.8
I am dissatisfied with the process of collaboration activities during the course.	36	21.2	66	38.8	39	22.9	20	11.8	9	5.3
I am satisfied with the quality of interaction between all involved parties.	42	24.7	75	44.1	45	26.5	14	8.2	6	3.5
I am satisfied with my participation in the class.	50	29.4	63	37.1	38	22.4	11	6.5	8	4.7
Total	41	24.1	67	39.4	40	23.5	16	9.4	6	3.5

Table (3) showed that near half of students (44.1%) satisfied with the quality of interaction between all involved parties and about (1.2%) of students strongly disagree they cannot interrupt the lecturer to ask a question when he/she is on the other side of the blended learning classroom.

Table (4) distribution of student's satisfaction regarding instruction in blended learning

Instruction	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	N	%	N	%	N	%	N	%	N	%
The use of blended learning technology in this course encourages me to learn independently.	35	20.6	73	42.9	50	29.4	17	10.0	15	8.8
Online course materials help me to understand better the class content.	41	24.1	60	35.3	47	27.6	15	8.8	7	4.1
Online course material stimulate my interest for this course.	46	27.1	51	30.0	49	28.8	14	8.2	10	5.9
I am satisfied with the level of effort this course required.	30	17.6	70	41.2	40	23.5	16	9.4	14	8.2

I am dissatisfied with my performance in this course.	35	20.6	65	38.2	43	25.3	19	11.2	8	4.7
Blended learning is good for theoretical knowledge.	29	17.1	53	31.2	45	26.5	14	8.2	9	5.3
Blended learning is good for clinical and practical skills.	41	24.1	51	30.0	51	30.0	16	9.4	11	6.5
I believe I will be satisfied with my final grade in the course.	43	25.3	59	34.7	43	25.3	13	7.6	12	7.1
I am satisfied with how I am able to apply what I have learned in this course.	34	20.0	69	40.6	53	31.2	9	5.3	5	2.9
it is easy for me to access the online course materials.	36	21.2	63	37.1	47	27.6	7	4.1	17	10.0
I am satisfied enough with this course to recommend it to others.	24	14.1	77	45.3	39	22.9	11	6.5	19	11.2
Compared to face-to-face course settings, I am less satisfied with this learning experience	42	24.7	64	37.6	37	21.8	17	10.0	10	5.9
I enjoy working on assignments by myself	40	23.5	57	33.5	51	30.0	10	5.9	12	7.1
Total	37	21.8	62	36.5	46	27.1	14	8.2	11	6.5

Table (4) showed that near half of students (45.3%) satisfied enough with this course to recommend it to others and about (2.9%) strongly disagree with how they able to apply what they have learned in this course.

Table (5) distribution of student's satisfaction regarding instructor in blended learning

Instructor	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	N	%	N	%	N	%	N	%	N	%
The instructor makes me feel that I am a true member of the class.	34	20.0	66	38.8	47	27.6	18	10.6	5	2.9
I am dissatisfied with the accessibility and availability of the instructor.	29	17.1	78	45.9	42	24.7	14	8.2	7	4.1
The instructor uses blended learning technology appropriately.	24	14.1	84	49.4	48	28.2	19	11.2	4	2.4
Class assignments were clearly communicated to me	36	21.2	72	42.4	37	21.8	16	9.4	9	5.3
Feedback on evaluation of tests and other assignments was given in a timely manner	27	15.9	75	44.1	39	22.9	12	7.1	8	4.7
Total	30	17.6	75	44.1	43	25.3	16	9.4	6	3.5

Table (5) showed that (49.4%) of students agree the instructor uses blended learning technology appropriately, while (2.4%) of students strongly disagree that the instructor uses blended learning technology appropriately.

Table (6) distribution of student's satisfaction regarding evaluation in blended learning

Evaluation	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	N	%	N	%	N	%	N	%	N	%
The online assessment was fair for you.	28	16.5	66	38.8	39	22.9	16	9.4	11	6.5
The online assessment and evaluation of learning is clear.	30	17.6	76	44.7	45	26.5	14	8.2	15	8.8
Total	29	17.1	71	41.8	42	24.7	15	8.8	13	7.6

Table (6) showed that near half of students (44.7%) agree the online assessment and evaluation of learning is clear while (6.5%) of students strongly disagree The online assessment was fair for them.

Table (7) distribution of student's satisfaction regarding course management in blended learning

Course management	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	N	%	N	%	N	%	N	%	N	%
Discipline is highly observed when the lecturer is on the other side of the blended learning classroom	32	18.8	61	35.9	38	22.4	18	10.6	9	5.3
The lecturer/supervisor always takes attendance.	42	24.7	59	34.7	40	23.5	15	8.8	12	7.1
I attend videoconferencing classes the same way I attend face-to-face classes	40	23.5	73	42.9	44	25.9	16	9.4	11	6.5
Total	38	22.4	64	37.6	41	24.1	16	9.4	11	6.5

Table (7) showed that near half of students (42.9%) agree that attend videoconferencing classes the same way attend face-to-face classes while (5.3%) of students strongly disagree that discipline is highly observed when the lecturer is on the other side of the blended learning classroom.

Table (8) distribution of student's satisfaction regarding technology in blended learning

Technology	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
	N	%	N	%	N	%	N	%	N	%
The instructor's voice is audible	37	21.8	78	45.9	33	19.4	13	7.6	9	5.3
Course content shown or displayed on the smart board is clear.	34	20.0	76	44.7	34	20.0	14	8.2	12	7.1
The microphone is in good working	35	20.6	68	40.0	43	25.3	16	9.4	8	4.7

condition.										
The video image is clear and comprehensive when the lecturer is on the other side of the blended learning classroom	42	24.7	58	34.1	51	30.0	12	7.1	7	4.1
Technical problems are not frequent and they do not adversely affect my understanding of the course.	40	23.5	64	37.6	41	24.1	20	11.8	5	2.9
The technology used for blended teaching is reliable.	29	17.1	76	44.7	37	21.8	22	12.9	6	3.5
Total	36	21.2	70	41.2	40	23.5	16	9.4	8	4.7

Table (8) illustrated that (45.9%) of students agree that the instructor's voice is audible while (2.9%) of students strongly disagree. Technical problems are not frequent and do not adversely affect understanding of the course.

Figure (2) : distribution of nursing students' satisfaction toward blended learning dimensions.

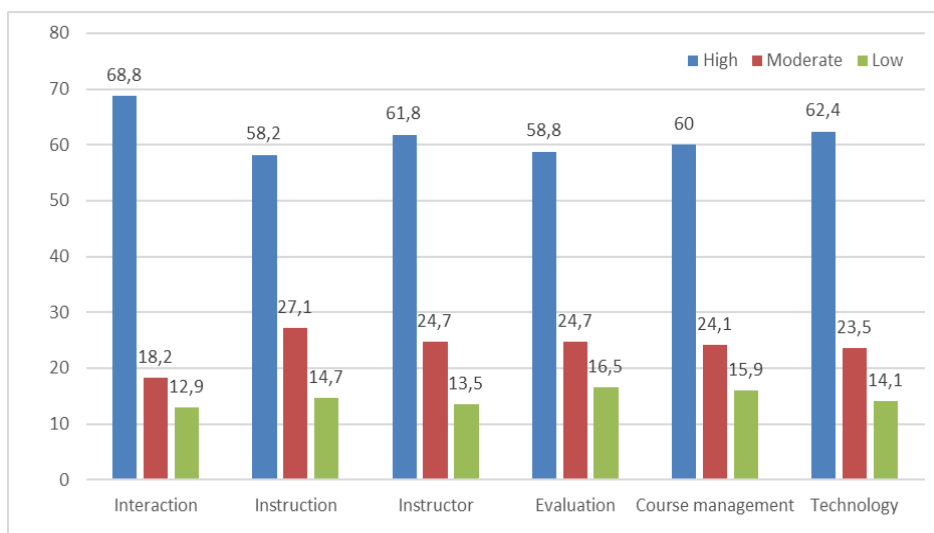


Figure (2) showed that about two third of students (68.8%) with high satisfaction with interaction in blended learning



Rural	45	42.9	24	60.0	17	68.0	86	50.6	6.960	0.031* (S)
Urban	60	57.1	16	40.0	8	32.0	84	49.4		
Father education level										
university	50	47.6	12	30.0	3	12.0	65	38.2	36.484	<0.001* (HS)
Secondary	24	22.9	22	55.0	10	40.0	56	32.9		
Read and write	27	25.7	4	10.0	5	20.0	36	21.2		
not read and write	4	3.8	2	5.0	7	28.0	13	7.6		
Mother education level										
university	31	29.5	6	15.0	2	8.0	39	22.9	35.224	<0.001* (HS)
Secondary	32	30.5	29	72.5	6	24.0	67	39.4		
Read and write	24	22.9	2	5.0	7	28.0	33	19.4		
not read and write	18	17.1	3	7.5	10	40.0	31	18.2		
Fathers job										
Worker	23	21.9	13	32.5	9	36.0	45	26.5	13.511	0.036* (S)
employee	66	62.9	25	62.5	9	36.0	100	58.8		
Farmer	13	12.4	0	0.0	6	24.0	19	11.2		
no work	3	2.9	2	5.0	1	4.0	6	3.5		
Mothers job										
House wife	74	70.5	29	72.5	23	92.0	126	74.1	4.948	0.084 (NS)
employee	31	29.5	11	27.5	2	8.0	44	25.9		
Family income										
Enough income	71	67.6	25	62.5	10	40.0	106	62.4	6.562	0.038* (S)
Not enough income	34	32.4	15	37.5	15	60.0	64	37.6		

>0.05 Non significant    <0.05\* significant    <0.001\* High significant

Table (10) show highly statistically significant between Total satisfaction with Father Education level and Mother education level when p-value was <0.001  
- Statistically significant between Total satisfaction with age, Residence, Fathers job and Family income when p-value was <0.05  
There is no statistically significant between satisfaction and gender

Table (11) Relation between socio-demographic student's characteristics with their total level of achievement

	Total achievement								Chi-square	
	Excellent		Very good		Good		Total		X <sup>2</sup>	P-value
	N	%	N	%	N	%	N	%		
Age										
20	16	14.2	9	18.0	1	14.3	26	15.3	10.405	0.109 (NS)
21	53	46.9	33	66.0	3	42.9	89	52.4		
22	37	32.7	8	16.0	3	42.9	48	28.2		
23	7	6.2	0	0.0	0	0.0	7	4.1		
Sex										
Male	52	46.0	14	28.0	1	14.3	67	39.4	6.643	0.036* (S)
Female	61	54.0	36	72.0	6	85.7	103	60.6		
Residence										
Rural	51	45.1	31	62.0	4	57.1	86	50.6	4.071	0.131 (NS)
Urban	62	54.9	19	38.0	3	42.9	84	49.4		
Father education level										
university	58	51.3	7	14.0	0	0.0	65	38.2	46.125	<0.001* (HS)
Secondary	24	21.2	29	58.0	3	42.9	56	32.9		
Read and write	27	23.9	8	16.0	1	14.3	36	21.2		
not read and write	4	3.5	6	12.0	3	42.9	13	7.6		
Mother education level										
university	37	32.7	2	4.0	0	0.0	39	22.9	31.775	<0.001* (HS)
Secondary	34	30.1	32	64.0	1	14.3	67	39.4		
Read and write	24	21.2	6	12.0	3	42.9	33	19.4		
not read and write	18	15.9	10	20.0	3	42.9	31	18.2		
Fathers job										
Worker	24	21.2	18	36.0	3	42.9	45	26.5	5.431	0.490 (NS)
employee	72	63.7	25	50.0	3	42.9	100	58.8		
Farmer	13	11.5	5	10.0	1	14.3	19	11.2		
no work	4	3.5	2	4.0	0	0.0	6	3.5		
Mothers job										
House wife	78	69.0	41	82.0	7	100.0	126	74.1	5.591	0.061 (NS)
employee	35	31.0	9	18.0	0	0.0	44	25.9		
Family income										
Enough income	75	66.4	28	56.0	3	42.9	106	62.4	2.771	0.250 (NS)
Not enough income	38	33.6	22	44.0	4	57.1	64	37.6		

>0.05 Non significant    <0.05\* significant    <0.001\* High significant

Table (11) show highly statistically significant between Total achievement with Father education level and Mother education level when p-value was <0.001\*\*

- Statistically significant between Total achievement with gender when p-value was  $<0.05$

## **Discussion**

Blended learning emerged as a new teaching method for distance learning among higher education institutions. It integrates face-to face teaching with web-based learning through the application of technology and the internet to improve students' learning and encourage teachers' to change their methods of education, and therefore to shift learning to a more student-centered model rather than a teacher-centered learning model. There is a need to measure the quality of blended learning through students' satisfaction because of increasing the usage of blended learning (Alsalhi et al., 2019).

The key factor in determining the quality of blended learning is students' satisfaction through measuring students' level of pleasure and the efficacy of the student's education experience (Dinh et al., 2021). The main objective of any educational program is to be satisfied with this program, which leads to the success and continuation of the learning package because it confirms the effectiveness of the educational process and increases its efficiency (El-Hawy et al., 2022).

Regarding general demographic characteristics of the study sample, the current study revealed that more than half of students aged between 20-21 years old, this result is consistent with Masrom, Alwi, & Asshidin (2019) titled Understanding learners' satisfaction in blended learning among undergraduate students in Malaysia revealed that more than half of students aged between 20-21 years old. The current study revealed that more than half of studied students are females. This result is consistent with Abd Hamid et al. (2020) titled The Satisfaction of Blended Learning among University Utara Malaysia (UUM) Students that found there were more female than male. Regarding family income the current study revealed that more than half of students have enough income, this result is supported with the study conducted by Alshawish, El-Banna, & Alrimawi (2021) titled Comparison of blended versus traditional classrooms among undergraduate nursing students: A quasi-experimental study found that almost half of the students in the sample came from middle income families while the other half were either from low- or high income households.

The present study found that all students own device to attend blended learning class, this result supported Alshawish, El-Banna, & Alrimawi (2021) titled Comparison of blended versus traditional classrooms among undergraduate nursing students: A quasi-experimental study found most of the students had own devices to access online or blended courses . The present study found that majority of students used mobile as a main device for attending online classes ,this result supported by Othman, Elsayed, & Abdelkhalek (2022) titled Nursing Students' Attitude and Satisfaction regarding to Blended Learning at the Time of COVID 19 Pandemic which revealed that the highest proportion of studied students use Smart phones than the Laptop or PC.

Regarding software used for online learning the present study found that the majority of students use zoom application as a main software for online course , this result in the same line with the study conducted by Fuady, Sutarjo, & Ernawati (2021) titled Analysis of Students' Perceptions of Online Learning Media During the Covid-19 Pandemic Study of E-learning Media: Zoom, Google Meet, Google Classroom, and LMS found that the learning media that are have the highest usefulness are Zoom media. From researcher's view point this result because the zoom platform has features on the main display that are simple and easy to operate.

Regarding students total score achievement, the present study revealed that more than half of students are excellent in their final grade, this result is supported by Berga et al. (2021) titled Blended learning versus face-to-face learning in an undergraduate nursing health assessment course: A quasi-experimental study revealed that student achievement is as high in the blended learning environment, And Grønlien et al. (2021) titled A blended learning teaching strategy strengthens the nursing students' performance and self-reported learning outcome achievement in an anatomy, physiology and biochemistry course–A quasi-experimental study found that a change in teaching strategies towards blended learning made an improvement of the exam results.

Also, S'aiz-Manzanares and colleagues (2020) titled Effectiveness of blended learning in nursing education showed that blended learning applied in learning management system with hypermedia resources favors greater achievement of effective learning in nursing students. Also, the present study result in accordance with Alsalhi, Eltahir and Al-Qatawneh (2019) titled the effect of blended learning on the achievement of ninth grade students in science and their attitudes towards its use concluded that blended learning has a positive impact on the achievement of students.

In addition the study of Tseng and Walsh (2016) titled Blended VS. Traditional Course Delivery: Comparing Students' Motivation, Learning Outcomes, and Preferences which revealed that students in blended learning scored higher on their final grades. And Ceylan, & Kesici (2017) titled Effect of blended learning to academic achievement revealed that blended learning environment increases the academic achievement averages. Also, the present study result agree with Rafiola et al. (2020) titled The Effect of Learning Motivation, Self-Efficacy, and Blended Learning on Students' Achievement in The Industrial Revolution 4.0 revealed that Blended learning has a positive and significant effect on the students' achievement of Public High School in Padang.

Also in the study conducted by Alsalhi et al. (2021) titled Does Blended Learning Improve the Academic Achievement of Undergraduate Students in the Mathematics Course?: A Case Study in Higher Education found that the academic achievement for the students who Studied by using blended learning was better. This indicates that using blended learning had a positive impact on the students' academic achievement. The result of the present study is consistent with the findings of the study of Migalang (2018) titled Blended Learning Startegy: Effects on Students Academic Performance and motivation towards Science Disaster Readiness Concept revealed that a student is exposed to blended learning approach, they exhibit academic excellence. This may be due to students' cohesive analysis about the lessons when blended learning strategy was introduced.

The results of the present study disagree with the results of Lin et al. (2017); Wei et al. (2017) titled *Blended learning versus traditional learning: a study on students' learning achievements and academic press* revealed that the use of blended learning had no significant effect on students' achievements. From the researcher point of view, the positive effect of blended learning on students achievement was due to blended learning provides educational experiences closer to reality, and facilitates an interactive environment that makes students more active and interactive in the educational process. Also blended learning provides more effective learning outcome gains by enriching today's learning environments with developing web technologies. Regarding the studied students' satisfaction with interaction domain the current study revealed that near half of students agree that there is quality of interaction between all involved parties in blended learning.

This result with supported by Taghizadeh and Hajhosseini (2020) titled *Investigating a blended learning environment: Contribution of Attitude, interaction, and quality of teaching to satisfaction of graduate students of TEFL* which revealed that the learners had highest amount of positive response to the items of interactions especially 'they receive enough feedback from their instructors when they need it' and 'The instructor regularly posts some questions for students to discuss on the discussion board'. In addition to Roff, (2018) titled *Student satisfaction and/or dissatisfaction in blended learning environments* revealed that the main reason why students want to take blended courses is that it "provides interaction with the instructor.

From the researcher's view point, this results may be related to the variety of interaction means in blended learning, for example (in traditional classroom) they will have their peers sitting right next to them, which lets them work together on course activities inside classroom. In addition to the (online classes) students can interact with peers and teachers via the class message board or forum and other means which reflects good interaction.

Concerning students satisfaction with instruction domain the present study revealed that near half of students satisfied enough with this course to recommend it to others, this result is agree with Alshawish, El-Banna, & Alrimawi (2021) titled *Comparison of blended versus traditional classrooms among undergraduate nursing students: A quasi-experimental study* revealed the majority of the students preferred to take blended courses, and most of them would recommend this format of learning to other students.

Regarding students satisfaction with course management domain the present study revealed that near half of students agree that attend videoconferencing classes the same way attend face-to-face classes, this result is disagree with El-Hawy et al. (2020) titled *Medical Students' Satisfaction Regarding Blended Learning during COVID-19 Pandemic* revealed that near half of students did not agree that attending a video conferencing class was not different to a face-to-face class and this may be due to poor commitment in the online classes as in face-to face classes.

Regarding students satisfaction with evaluation domain the present study revealed that near half of students agree the online assessment and evaluation of learning is clear, this result is contradict with Chayanuvat (2021) titled *Effectiveness of a Blended Learning Model for Teaching Chinese Listening Skills to Mathayom Suksa*

Four Thai Students revealed that the lowest level of satisfaction was found at assessment and feedback which suggests that teachers should improve the way of assessments of blended learning.

The present study showed that more than half of studied student (about sixty percent) were satisfied toward blended learning. This result was supported by the result of the study hold by Al Awamleh (2020) titled Students satisfaction on blended learning in School of Sport Sciences mentioned that students 'satisfaction was generally high with more than Eighty percent and also satisfied about blended program and online learning environment. The present study result also supported by Kassem, Abo Habieb, & El-Bastwese, (2020) titled Effect of Blended vs. Traditional Teaching Methods on Nursing Students Academic Stress and Their Achievement at Mansoura University revealed that more than half of nursing students were high satisfaction level at blended methods. Also present study result support by Ramly et al (2019) title Students' Satisfaction Towards the Implementation of Blended Learning: A Case Study in UiTM Negeri Sembilan showed that the students were highly satisfied with the blended teaching method.

The present study result disagree with Othman, Elsayed & Abdelkhalek (2022) titled Nursing Students' Attitude and Satisfaction regarding to Blended Learning at the Time of COVID 19 Pandemic revealed that the majority of studied student (more than ninety percent) were unsatisfied toward blended learning. This result may be related to difficult access to the internet, poor internet infrastructure and its high cost. This turned out to be the most critical factors in both Web-based and blended learning.

From the researcher's point of view , students satisfaction toward blended learning method because that blended learning is now gaining more recognition and acceptance and thus appears as a different teaching method that helps students improve their performance. As well as saving time particularly for large classes because it helps to reach a wide number of students in a short time. Concerning relation between achievement and satisfaction the present study showed highly statistically significant between total achievement and total satisfaction, This result is supported by (Ibnu, 2021) titled The Blended Learning Model During Work from Home and Its' Impact on Students' Satisfaction and Learning Achievement in the Pandemic Covid-19 Period found that more than half of satisfied respondents have good learning achievement. Thus, the more satisfied with blended learning, the better student achievement and The P-value 0.000 study means that there is a relationship between satisfaction and learning achievement of respondents in blended learning during Covid 19. Also the present study result agree with Zeqiri, Kareva, & Alija (2020) titled the impact of blended learning on students' performance and satisfaction in South East European university their results revealed a strong relationship between students' satisfaction and their performance.

From the researcher's point of view, highly relation between achievement and satisfaction because the high achieving students are the most satisfied with blended learning, and prefer blended learning over face-to-face or online. High achievers also felt that blended learning was more comfortable, more attractive and felt learning concepts were better than face-to-face learning. Regarding relation between satisfaction and gender the present study showed that there is no relation

between level of students' satisfaction and gender, This result is supported by Othman, Elsayed, & Abdelkhalek (2022) titled Nursing Students' Attitude and Satisfaction regarding to Blended Learning at the Time of COVID 19 Pandemic revealed that there is no relation between level of students' satisfaction and sex. The present study result is disagree with Venkatesh et al. (2020) titled Factors influencing medical students' experiences and satisfaction with blended integrated E-learning found that there is relation between students satisfaction and sex that showed male students reported a higher overall learner satisfaction than female counterparts.

From the researcher's point of view ,there is no relation between satisfaction and students gender may be related to there are many important factors that can affect the learners' satisfaction in using blended learning as e-learning adaptability, perceived usefulness, in-time of teacher's response, perceived ease of use and course applicability not the gender.

Regarding relation between achievement and gender the present study revealed Statistically significant between total achievement and gender, this result disagree with Adepeko (2018) titled Relative Effectiveness of Blended Learning Instructional Approach on Academic Achievements of Physics Students in Secondary School in ONDO State, NIGERIA revealed that the achievement of students on Physics is not determined by gender. That is, the effect of gender on students' achievement in Physics was not statistically significant.

### **Conclusion**

In the light of the current study, it can be concluded that, more than half of students with high total achievement excellent score and about more than sixty percent were satisfied toward blended learning, and also, there is highly statistically significant between total satisfaction and total achievement. This result was supported by research questions.

### **Recommendations**

In light of the results of the study, the researcher recommends the following:

- Involve blended learning as alternative plan at the time of crisis
- Support from administrative authority to deal with the barriers face the implementation of blended learning.
- The faculty should work on the blended learning that focusing on improving the achievement.
- Both teachers and students require a specialized training programs to use computers and the internet and faculty management should takes serious steps to facilitations development skills of teachers' and students information technology
- Empowering teachers to implement blended learning and other strategies of teaching in the teaching process.
- Researchers could perform more research on the implementation of blended learning approach with academic achievement.

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