

Quality of Remote Learning during Outbreak of COVID 19 Pandemic and its Effect on Nursing Students' Satisfaction

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Abstract:

Background: COVID-19 interfere the designed system of education to achieve cognitive, affective, and psychomotor domain of learning and rapid application of remote learning systems is linked to obstacles that can affect students' satisfaction. **Aim of the study:** This study directed to assess quality of remote learning as perceived by nursing students and its effect on their satisfaction. **Subjects and method:** A descriptive, correlational research design was applied. The current study was conducted in the faculty of nursing, Tanta University. A convenience sample consisted of 794 undergraduate nursing students was involved in the study. Quality of Remote Learning and Nursing Student's Satisfaction regarding remote Learning scales were utilized to achieve the aim of this study. **Results:** More than sixty percent of nursing student perceived quality of remote learning as low especially for faculty staff, course structure, information, and system quality. As well as nearly two thirds of nursing student were dissatisfied with remote learning. **Conclusion:** Quality of remote learning affect nursing student's satisfaction where there was a statistically significant positive correlation between overall quality of remote learning and overall nursing student's satisfaction. **Recommendation:** Improving faculty staff online experiences is vital by providing continuous training and education opportunities. Also, maintaining powerful online education platform and internet infrastructure is necessary to improve remote learning quality and increase nursing student's satisfaction.

Keywords: Nursing Students, Remote Learning, Student's Satisfaction.

Introduction

The global spread of COVID-19 has greatly impacted the higher education sector resulted in the suspension of classes, disturbing the original learning plans and threatened student's future education privileges ⁽¹⁾. The whole education system in universities has changed from a traditional education system to an online education based on remote learning for the continuance of academic activities. Remote learning is now much more than virtual education, and in the context of the COVID-19 pandemic, it became a social phenomenon and necessary approach to sustain normal teaching order ⁽²⁾.

Remote learning is defined as educational activities takes place online in synchronous or asynchronous environments. It depends on the use of electronic media and devices for enhancing accessibility of training, communication and collaboration that helps in accepting new ways of realizing and establishing learning ^(3,4). Information in this type of learning is communicated by technology means, such as conversation boards, video conferencing, and online assessments. Remote learning can be characterized as a tool that can make the teaching–learning process more

student-centered, more innovative, and even more flexible ⁽⁵⁾. It provides nursing student the aptitude to learn on their own time and place

as well as join online to download resources that are crucial to their learning requirement⁽⁶⁾.

Effective application of remote learning is mainly depending on the quality and efficiency of its educational aspects including system, services, faculty staff, course structure, learners, and information ⁽⁷⁾. System quality directly affects students' learning process. The three constructs systems (educational, technical and support system) established in respect of students' desires and requirements as well as help the learner become competent and self-confident in online learning, social interactions, and self-evaluation ⁽⁸⁾. Nursing students need to be supported by services of information technology (IT) by providing clear instruction and training about how to deal simply with the Moodle to gain needed knowledge and skills easily and achieve learning goals⁽⁹⁾.

Faculty staff efficacy also are the most significant part influence utilizing remote learning system that through supervision and emotional support can assist the students to achieve their goals, develop

control over the educational process and decrease stress in the crises time ^(8,10). Remote learning efficacy relies on how course content designed, outlined, organized and interacted in attractive way through the Moodle. Aspects related to learner such as attitude, prior experience in online learning, and computer applications are vital that enable them to deal with the Moodle straightforwardly, complete their tasks more rapidly, facilitate their learning performance and improve their learning satisfaction ⁽⁷⁾.

Nursing students' satisfaction considered to be an important indicator of the quality of academic experience in learning. Student satisfaction is defined as "the student's perceived value of their learning experiences in an educational situation" ⁽¹¹⁾. Students' satisfaction with remote learning linked to their experience in applying this kind of learning ⁽¹²⁾. Their satisfaction dependent mainly or affected by course content, student-instructor interaction, the instructor's role in the course and the use of effective learning tools. Where, satisfied students appear to be engaged, encouraged and responsive; contribute to an effective learning environment; and reach at higher levels ⁽¹³⁾. Conversely, dissatisfied students will reduce the practice of remote learning or,

in the end they will never use it anymore⁽¹⁴⁾.

Significance of the study

To finish the academic year during the COVID-19 outbreak, nursing students abruptly enforced to practice remote learning. Recent literatures highlight certain weakness of online teaching infrastructure and disagreement about online learning quality^(15,16). As well, the fact of challenging implementation of online learning in Egypt that affects its quality ⁽¹⁷⁾. Besides, the negative consequence of the current critical circumstances of COVID-19 on students. So, it becomes serious to assess the quality of remote learning and its effect on nursing student satisfaction.

Aim of the study

This study aimed to assess quality of remote learning as perceived by nursing students and its effect on their satisfaction.

Research Questions

- 1- What are the remote learning quality levels as perceived by nursing students?
- 2- What are the nursing students' satisfaction levels?
- 3- Is quality of remote learning affect nursing students' satisfaction?

Subjects and Methods:

Research design: A descriptive, correlational design was applied.

Research Setting: This study was conducted at faculty of nursing, Tanta University.

Subjects: This study utilized a convenience sample, which consisted of 794 undergraduate nursing students from first (n=197), second (n=275), third (n=138), and fourth (n=184) year from the previously mentioned setting. The overall response rate was 53.2% out of 1492 nursing students (males & females) in the academic year of 2019/2020, who agree to participate in data collection.

Tools of data collection

Two tools were used to gather data of the study.

1-Quality of Remote Learning Assessment Scale.

The scale was based on the updated version of **DeLone and Mclean (2003)**⁽¹⁸⁾ and modified by the researchers through omitting and merging the items with the same meaning to assess the quality of remote learning as perceived by nursing students. It consisted of 24 items classified into six dimensions; system quality (5 items), service quality (2 items), faculty staff quality (6 items), course structure quality (4 items), learner quality (3 items)

and information quality (4 items). Besides, four items related to nursing students' demographic characteristics. The nursing students' responses were evaluated against 3-points Likert scaling where 1 =strongly disagree 2= neutral and 3 =strongly agree. Levels of remote learning quality interpreted statistically based on the cut of value into three levels; $\geq 75\%$ as high level; $<75\%$ -60% as moderate level; $<60\%$ as low remote learning quality

2-Nursing

Student's Satisfaction regarding Remote Learning scale

Nursing student' satisfaction scale was constructed by **Abo Seada&Mostafa(2017)**⁽¹⁹⁾ in Likert scaling with five points scaling going from 1 (strongly disagree) to 5 (strongly agree). It contained (12) statements to evaluate nursing student' satisfaction regarding remote learning. Levels of nursing students' satisfaction scored statistically based on the cut of value as; $>60\%$ as high satisfactory level; $<60\%$ as low satisfactory level.

Procedures

Data collected through a self-administered questionnaire and WhatsApp application. The questionnaire translated into the Arabic language to be clear for all nursing student. The questionnaire took

approximately 10 to 15 minutes for each participant. The actual time for data collection between June 2020 and August 2020 during the academic year 2019/2020.

Ethical considerations: The authors obtained approval from the authoritative personnel at the Faculty of Nursing, Tanta University. Oral consent was obtained from nursing students after explaining the aim of the study. The participation in the study was voluntary without penalty from unwilling participants. They were told that their anonymity and answers would be kept confidential.

Validity and reliability: A panel of five experts was invited to review the questionnaire from the nursing administration specialty to assess face and content validity. Based on this revision, necessary modifications were done, and a pilot study was conducted on 10% of nursing students (n=79) who are excluded from the study sample. Reliability of the tools was tested using Cronbach's alpha coefficient test which equal to 0.801, 0.783 for tool 1,2.

Statistical analysis of the data

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0(Armonk, NY: IBM Corp). Qualitative data were described using number and percent. The

Kolmogorov-Smirnov test was used to verify the normality of distribution. Quantitative data were described using range (minimum and maximum), mean, and standard deviation. Significance of the obtained results was judged at the 5% level. The used tests were Chi-square test for categorical variables, to compare between different groups, Monte Carlo correction for chi-square when more than 20% of the cells have expected count less than 5.

Results

Table (1) shows number and percent distribution of nursing student demographic data. The table shows that the highest percent of nursing student (59.4%) at age group < 20 year with mean age 19.57 ± 1.35 . More than three quadrants (76.4%) of nursing student are female and the majority (97.9 %) were single. Regarding to grade, 34.6% at second grade followed by 24.8% at first grade, 23.2% at fourth grade and 17.4% at third grade.

Table (2) illustrates distribution of the studied nursing student according to perception of remote learning quality. The table shows that in system quality more than three quadrants (75.5%) of nursing student disagree that Moodle always available for them to perform learning

activities and more than half (54.2%) disagree that Moodle launches and runs right away promotion. Regarding to service quality more than half (55.8%) agree that The IT services staff is available and cooperative when facing error at Moodle.

In relation to faculty staff quality, more than half (50.6%) of nursing student disagree that faculty staff give them chance to talk about the crisis of **COVID-19** and more than forty percent (46.5%, 43.5%) of them disagree that faculty staff provide emotional support to students, and receive a prompt response to questions and concerns respectively.

More than fifty percent (52.9%) of nursing student disagree that learning materials are presented in an attractive way and more than forty (43.7%, 42.6%) disagree that the materials arranged in a logical sequence and understandable and the learning objectives are conveyed properly respectively.

Concerning learner quality. The table shows that more than fifty percent (54.8%) of nursing student agree that they have sufficient computer and internet skill to deal with this Moodle while more than two fifth (40.4%) disagree that they can learn actively in the e-learning environment. At information quality, more than forty percent (42.7%) of nursing

student agree that information in Moodle is in a form readily useable.

Figure (1) shows distribution of the studied nursing student according to levels of quality of remote learning. In overall more than sixty percent of nursing student perceived quality of remote learning as low especially for faculty staff, course structure, information, and system quality respectively.

Table (3) shows mean percent score and ranking of quality of remote learning dimensions as perceive by nursing students. The highest mean percent (60.47%) was for service quality while lowest mean present (45.62%, 45.48 %) was for faculty staff quality and course structure, respectively.

Figure (2) shows levels of overall nursing students' satisfaction of remote learning. Nearly two thirds of nursing student dissatisfied with remote learning while more than on third were satisfied.

Table (4) shows correlation between overall satisfaction and overall quality of remote learning. As uncovered in table there was a statistically significant positive correlation between overall quality of remote learning and overall nursing student's satisfaction at ($p \leq 0.05$). System quality as well as information quality of remote learning were statistically significant positively correlated ($p \leq 0.05$) with overall student's satisfaction.

Table (1): Distribution of nursing students according to demographic characteristics (n = 794)

Demographic data	No.	%
Sex		
Male	187	23.6
Female	607	76.4
Age		
< 20	472	59.4
20 – 23	322	40.6
Min. – Max.	18.0 – 23.0	
Mean ± SD.	19.57 ± 1.35	
Grade		
First	197	24.8
Second	275	34.6
Third	138	17.4
Four	184	23.2
Marital status		
Single	777	97.9
Married	17	2.1

Table (2): Distribution of nursing student according to perception of remote learning quality (n=794)

Remote Learning quality	Disagree		Neutral		Agree	
	No.	%	No.	%	No.	%
System Quality						
It is easy to use Moodle	212	26.7	290	36.5	292	36.8
Design and user interface of system are attractive, includes all necessary features and functions needed	306	38.5	246	31.0	242	30.5
Moodle is always available for me to perform learning activities	599	75.5	106	13.4	89	11.1
Moodle launches and runs right away promotion	425	54.2	197	24.8	172	21.7
Moodle protects my information logging only with my account and password	326	41.1	221	27.8	247	31.2
Services Quality						
IT provides enough and clear instructions/training about how to use Moodle	229	28.9	189	23.8	376	47.3
The IT services staff is available and cooperative when facing an error	174	21.9	177	22.3	443	55.8
Faculty staff quality						
Faculty staff communicate course content effectively	310	39.0	225	28.3	259	32.7
Faculty staff have experience in using operating systems and internet	320	40.3	226	28.5	248	31.2
I receive a prompt response to questions and concerns from my instructors	345	43.5	227	28.6	222	27.9
Faculty staff have a positive attitude to utilization of Moodle	272	34.3	258	32.5	264	33.2
Faculty staff give me chance to talk about covid 19 crisis	402	50.6	183	23.0	209	26.3
Faculty staff provide emotional support to students	369	46.5	182	22.9	243	30.6
Course structure quality						
The learning objectives are conveyed properly	338	42.6	218	27.5	238	30.0
The materials arranged in a logical sequence and understandable	347	43.7	211	26.6	236	29.7
Learning materials are presented in an attractive way	420	52.9	190	23.9	184	23.2

Evaluation criteria were clearly state for every subject	256	32.2	208	26.2	330	41.5
Learner quality						
I have sufficient computer and internet skill to deal with this Moodle	187	23.6	172	21.7	435	54.8
I can learn actively in remote learning environment	321	40.4	195	24.6	278	35.0
I believe that remote learning gives me the opportunity to acquire new knowledge	283	35.7	196	24.7	315	39.7
Information quality						
Information in Moodle is concise and clear	279	35.1	247	31.1	268	33.8
Information in Moodle is sufficient and complete	302	38.0	240	30.2	252	31.7
The content in the Moodle is up to date	241	30.4	251	31.6	302	38
Information from Moodle is in a form readily useable	235	29.6	220	27.7	339	42.7

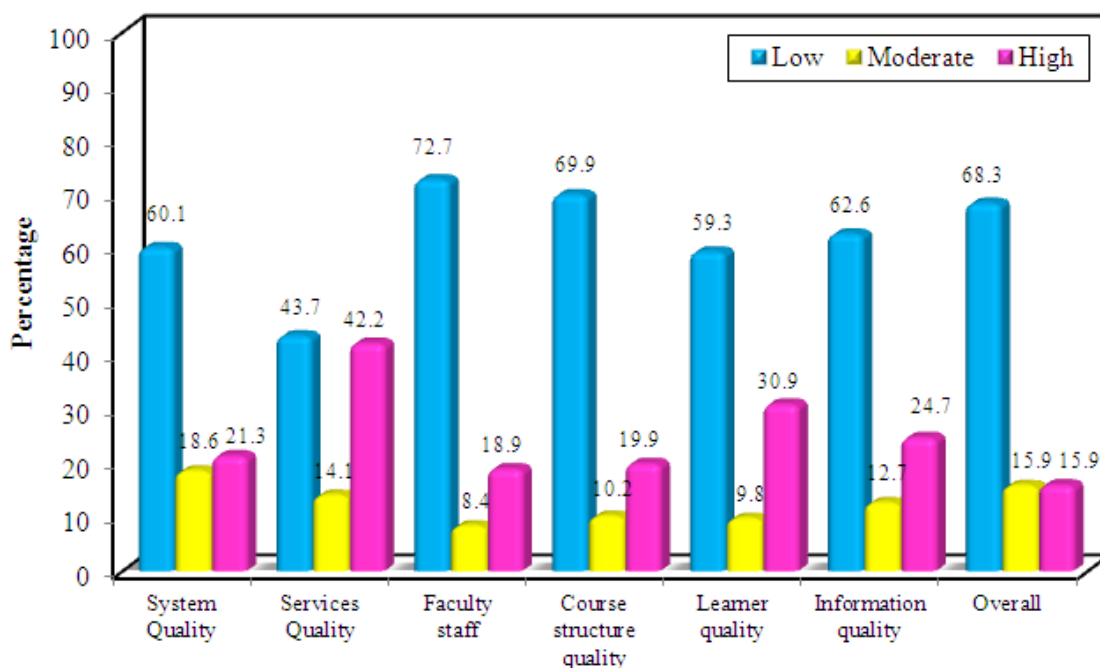


Figure (1): Distribution of nursing student according to levels of quality of remote learning

Table (3): Mean percent score and ranking of quality of remote learning dimensions as perceived by nursing students (n = 794)

Quality of Distance Learning dimensions	Mean%	Rank
System Quality	52.41	3
Services Quality	60.47	1
Faculty staff quality	45.62	5
Course structure quality	45.48	6
Learner quality	53.78	2
Information quality	51.55	4

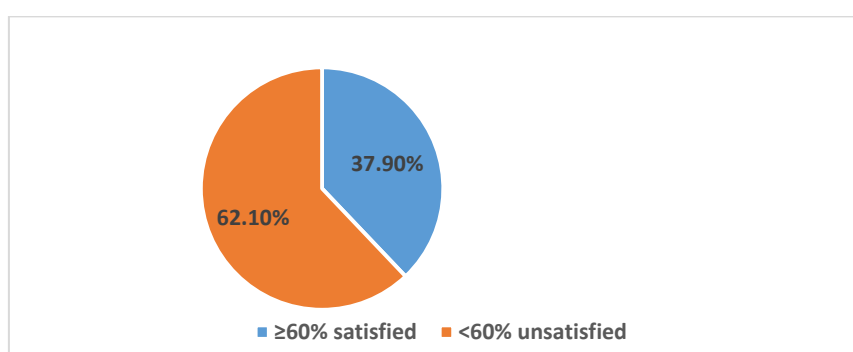


Figure (2): levels of overall nursing students' satisfaction of remote learning

Table (4): Correlation between overall satisfaction and overall quality of remote learning(n = 794)

Quality of Distance Learning	Overall satisfaction	
	R	P
System Quality	0.070	0.049 [*]
Services Quality	0.052	0.144
Instructor quality	0.066	0.063
Course structure quality	0.049	0.167
Learner quality	0.067	0.060
Information quality	0.076	0.033 [*]
Overall	0.075	0.035[*]

r: Pearson coefficient

*: Statistically significant at $p \leq 0.05$

Discussion

Sudden threat of COVID-19, pandemic that transpired in late 2019 and the beginning of 2020 forced all organizations of education around the world to be shifted from traditional face to face teaching methods to remote learning. But the implementation of remote learning method during this period has certain challenges to university and to any participated individual in the process of learning where all parties seek to improve quality of learning as possible⁽²⁰⁾. So, present study aimed to assess the quality of remote learning as perceived by nursing students and assess its effect on their satisfaction.

System quality

The study result revealed that more than three quadrants of nursing student disagree that Moodle always available for them to perform learning activities and more than half disagree that Moodle launches and runs right away promotion. This may be due to high pressure from users of model from all nursing student and staff. This is agreed with **Bao, (2020)**⁽²¹⁾ who found that overload from users often closedown platform and servers unable to provide services to many users. **Favale et al. (2020)**⁽²²⁾ mentioned that users can face

many technical difficulties that hinder and slow-down remote learning. **Adnan and Anwar (2020)**⁽²³⁾ found that a vast majority of students are unable to access the internet due to system problems. In this regard **Mahmoud, El- Magrabi, and Mohamed (2015)**⁽²⁴⁾, **Kaur and Bhatt (2020)**⁽²⁵⁾ and **Ali (2020)**⁽²⁶⁾ recommend about significance of improving capacity of learning management system (LMS) and network at universities.

Service quality

Result of the study revealed that the highest mean percent score was for service quality and more than half of nursing students agree that the IT services staff is available and cooperative when facing an error at Moodle. This is exactly due to large effort done from faculty's IT members during the period of COVID-19. This study supported by **Markova, Glazkova and Zaborova (2017)**⁽²⁷⁾ who found that work of the support staff was rated as excellent and good from students. **Al-Fraihat et al. (2020)**⁽⁷⁾ also in agreement with the result and stated that presence of technical staff who support students, provide guidance and train on how to use the model contribute to high level of service quality of online learning.

Faculty staff quality

Analysis of the present study results revealed that more than half of nursing student disagree that faculty staff give them chance to talk about the crisis of COVID-19 and more than forty percent of them disagree that faculty staff provide emotional support to students, and receive a prompt response to questions and concerns. This is may be due to the sudden closure of university during COVID-19 has left many faculty staff uncertain about their role and unable to use technology effectively to communicate and teach. This result agreed with **Gillett-Swan(2017)**⁽²⁸⁾ who mentioned that university staff need to be proficient in using technology. Also, **Tara et al. (2020)**⁽²⁹⁾ stressed about the importance of university role in providing educators with required opportunities to develop technologically skill. On contrary **Alabdullaziz et al. (2011)**⁽³⁰⁾ not support result and found that instructors are confident in their abilities when using internet and e-learning environments. Also, **Markova et al.(2017)**⁽²⁷⁾ result found that student perceived instructor as well in their e- learning skills.

Course structure quality

Result of this study showed that the lowest mean percent was for course

structure quality, where, More than fifty percent of nursing student disagree that learning materials are presented in an attractive way and more than forty disagree that the materials arranged in a logical sequence and understandable and the learning objectives are conveyed properly. This is due to urgent switch to remote learning with restricted time plan does not give any opportunity for faculty staff members to prepare and organize learning materials that are suitable to this new method of learning. The same result founded by **Doghonadze et al. (2020)**⁽³¹⁾ who revealed that learning materials that exist are not well organized and with low quality. In this regard, **Elfriantoet al. (2020)**⁽³²⁾ stressed that teaching materials must be properly planned, so they are tested and ready in time. Also, **Kaur (2020)**⁽²⁵⁾, **Adnan and Anwar (2020)**⁽²³⁾ indicated that educational organizations need to improve and redesign their curriculum with appropriate content that is suitable for online lectures. While **Demuyakor (2020)**⁽³³⁾ disagree with our result and found that students are satisfied with the learning materials presented.

Learner quality

The study result showed that more than two fifth of nursing student disagreed that

they could learn actively in the e-learning environment. This may be due to students' loss motivation to engage in this new learning environment due to the lack of face-to-face contact with teachers and peers. This is congruence with **Dhawan (2020)**⁽⁵⁾ who mentioned that students want two-way interaction which sometime gets difficult to implement in this new environment. Also, **Zhu et al. (2020)**⁽³⁴⁾ recommended about important of strengthening social interactions in e-learning environment. But, **Ali (2016)**⁽⁶⁾ disagree with result and found that majority of nursing students' willingness to learn in this process. **Hung et al. (2010)**⁽³⁵⁾ disagree with result and found that students are highly motivated for e-learning.

Information quality

Result of study showed that more than forty percent of nursing student agreed that information in Moodle presented in a form readily useable. Information shaped by learning management system is important as computer hardware and software because it helps students to use the system appropriately. This result supported with **Alkhalaf et al. (2013)**⁽³⁶⁾ who revealed that more than forty percent of student confirmed that an e-learning system provides information in

an easy, simple, clear, and well-coordinated way.

Total quality

Result of the study revealed that more than sixty percent of nursing student perceived quality of remote learning as low especially for faculty staff, course structure, information, and system quality. This is because quality of remote learning requires significant planning and teamwork from all participant in learning process especially stakeholders of e-learning system as learners, faculty staff, institution, and administration. This result is in agreement with **Lassoued et al. (2020)**⁽³⁷⁾ who mentioned that there are four basic obstacles for achieving quality in remote learning including personal, academic, technical and financial and organizational obstacles. Additionally, **Abbasi et al. (2020)**⁽¹⁶⁾ found that more than seventy percent of students have negative perceptions towards e-learning. Also, **Adnan and Anwar (2020)**⁽²³⁾ highlighted that online learning cannot produce desired results in underdeveloped countries. **Doghonadze et al. (2020)**⁽³¹⁾ concluded that many countries need to do more to be able to switch to high-quality of distance education. In contrast, **Allo, (2020)**⁽³⁸⁾ study showed that online

learning is good during COVID-19 pandemic. Also, **Bączek et al.(2020)**⁽³⁹⁾found that high percent of respondents rated e-learning as enjoyable.

Student satisfaction

Our result showed that nearly two thirds of nursing student dissatisfied with remote learning. This is due to considerable percentage of students believe that remote learning did not gives them any opportunity to acquire new knowledge due to difficulties in remote learning environments such as technical problems, sense of isolation, and lack of social support. This is agreed with

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(2018)⁽⁴⁰⁾who recommended that higher levels of understandability, interest, and promoting awareness led to increased students' satisfaction with the online learning experience. Also, **Pingle's (2011)**⁽⁴¹⁾ stressed on the importance of presence of student right attitude and preparedness to apply e-Learning program successfully. The result disagrees with result of **AboSeadaand Mostafa. (2017)**⁽¹⁹⁾who found that majority of nursing students highly satisfied with e-learning experience.

Correlation

Study result showed statistical positive correlation between overall nursing

student satisfaction and overall quality specifically quality of system and information. This result agreed with **Pham et al. (2019)**⁽⁴²⁾ who found that overall e-learning quality was positively related to e-learning students' satisfaction. **Shahzad et al. (2020)**⁽⁴³⁾ who found that information quality and system quality have direct relationships with user satisfaction. Also, **Chen et al. (2020)**⁽¹⁾ found platform availability has the greatest influence on user satisfaction and **Fleming et al.(2016)**⁽⁴⁴⁾result indicate that technological support are considered as a predictors for users' satisfaction.

Conclusion

Remote learning becomes a prerequisite for any higher education institute that strive for recognition at this era. This institute has to apply this new type of learning with high quality in order to satisfy students who are considered the customers of this service.

Recommendation

Educational authorities (decision makers) need to:

- Improve the online education platform, internet infrastructure and access to the internet.
- Support faculty staff by providing continuous training and education

opportunities in the field of distance education and its requirements.

- Exert effort to provide students with sufficient, concise, clear and well organized information at Moodle.
- Designing framework to assess and ensure quality of remote learning.
- Empower and prepare student for e-learning through educational programs.

Faculty staff

- Redesign curriculum, study materials to be suitable to new learning environment.
- Seek continuously for methods that improve their knowledge and skills in distance learning.
- Make efforts to humanize the learning process to the best possible extent to help students to adapt to remote learning.
- Future research is required to study competency of nursing student and faculty staff in e-learning.

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