MJN QUALITY OF EXPERIENCES (QOE) WITH E-LEARNING AMONG NURSING STUDENTS IN A PRIVATE HEALTHCARE UNIVERSITY SETTING IN MALAYSIA

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ABSTRACT

Background: During the COVID-19 pandemic, students in higher education institutions are not allowed to be on campuses due to safety reasons. However, educational activities need to continue, and students need to graduate on time. To facilitate teaching, learning, and assessment, E-learning had been adopted globally by all educational institutions from schools to Higher learning institutes. Therefore, this research aims to assess nursing students' satisfaction and behavioural intentions towards E-learning, mainly on the Moodle-based Learning Management System (LMS). **Methods:** This cross-sectional survey study includes 160 nursing students from one of the private nursing colleges in Malaysia. A validated questionnaire SERVQUAL was used for data collection. The questionnaire has five (5) quality dimension constructs to measure E-learning quality. The questionnaire also included questions related to satisfaction with the E-learning and behavioural intentions of learners regarding the use of E-learning in the future. The data was collected using Google forms. **Results:** The study findings show that respondents positively rated E-learning quality on a Likert scale of 1-4, ranging from strongly disagree to strongly agree (M=2.5; SD=0.36). Pearson Correlation test showed that all five quality dimensions, namely "Empathy," "Assurance," "Reliability," "Responsiveness," and web content quality, had positive Correlation with E-learning quality. However, "Reliability" and website content had the most positive influence on E-learning quality (r=0.733; p=0.000). The findings also suggest that E-learning quality was not a big driver for the behavioural intentions in promoting online E-learning (r =0.185; p =0.019). However, grade expectations were found to have a strong positive relationship with the satisfaction of learners with E-learning. **Conclusion:** Providing quality E-learning platforms and experiences can help improve the E-learning quality experience of the learners, promote satisfaction and grade expectations of the learners of higher education institutions. Given the characteristics of nursing students, it is necessary to develop and apply an effective and viable E-learning educational program to sustain motivation and produced the desired learning outcome among nursing students.

Keywords: E-learning, E-learning; Nursing Sudent; Quality of Experience; E-learning Quality

INTRODUCTION

There has been an abrupt wave of uncertainty in the education sector, especially in higher education as a result of the COVID 19 Pandemic. This is countered to some extent by the easy availability of Information and communication technology (ICT). However, assessment of E-learning quality is an important measure to evaluate and ensure provision of good quality education. E-learning may be appealing to students because of convenience to use anytime, anywhere, according to personal preferences (Doherty, 2006).

Background of the Study

Malaysia temporarily closed all educational institutes on 17th March 2020 and switched all educational activities to E-learning during the Movement Control Order (MCO)

period related to COVID 19 pandemic containment. Schools and universities have thus organized all teaching and learning activities via distance E-learning using various E-learning platforms. E-learning is now mandatory to all the students regardless of user-friendliness access to gadgets or the internet or student's motivation to learn online or preference to E-learning. Conversely, teachers also have numerous issues in swiftly transferring to E-learning mode and preparing teaching learning and assessment materials in online platforms. Most importantly, technical issues like teachers' Information and Communication Technology (ICT) skills in handling synchronized and asynchronized educational platforms are crucial. The quality of E-learning resources is indirectly proportional to the motivation of students in using E-learning as a learning strategy. Altogether the quality of Experience with E-learning is decided by the knowledge or subject expertise of the teachers, which is the deciding factor for "Reliability" and "Responsiveness." Another major factor is the commitment or "Assurance" of the teachers in using E-learning platforms to make the E-learning experience meaningful to students. With the availability of various social media platforms, some teachers who are not comfortable with the Moodle-based Learning Management System (LMS) switched to the use of media like Telegram or even WhatsApp for exchanging information with students.

Globally, the educational sector is accepting the norm of "learning and training anywhere anytime" (Aggarwal & Comyn, 2020). Teachers and students have been equally challenged in the sudden requisite to switch to E-learning. This study is mainly aimed to assess the Quality of Experience with E-learning using different quality dimensions presented in the SERVQUAL questionnaire.

Purpose of the Study

To investigate nursing students' (1) perception towards E-learning quality dimensions (2) E-learning quality (3) behavioural intentions towards E-learning (4) satisfaction with E-learning and (5) students grade expectations related to Moodle-based Learning Management System (LMS) during the COVID -19 pandemic.

METHODOLOGY

Research Design

This descriptive study aimed to examine perception towards E-learning quality dimensions, satisfaction with E-learning, behavioural intentions, and grade expectations of nursing students. The researcher recruited the participants through convenient sampling from one of the private healthcare universities in Negeri Sembilan state. Junior or senior undergraduate nursing students at all levels were involved in the study. The data collection was done in June 2020 for over two weeks.

Participants

The sample size was calculated using the Krecjie Morgan table (Krejcie & Morgan, 1970). Based on the population size and using the Krejcie-Morgan table, a total of 210 samples were required for the survey. The respondents of the study were nursing students from the undergraduate nursing program who have already had classes as E-learning during the COVID-19 pandemic. A total of 160 nursing students (response rate of 76 %) responded to this online cross-sectional survey using Google forms. The majority of the respondents were females (92%) Malays (81%) from the Diploma in nursing program (90%) with a mean age of 21.5 years (SD=2.2). All the 160 responses were included in this study, as the data had no missing data.

Data Collection Tool

The SERVQUAL questionnaire is a validated questionnaire (Udo, Bagchi & Kirs, 2011). The permission to use the questionnaire was obtained from the researcher who developed the questionnaire. The SERVQUAL tool has 35 questions, and only 34 items were included in this study. The quality dimensions has five (5) constructs with 22 items. The five constructs are "Empathy" (4 items), "Assurance" (4 items), "Responsiveness" (3 items), "Reliability" (3 items), and Web content (8 items). Questions on E-learning quality comprises of 4 items. Satisfaction with E-learning and behaviour intentions has 4 and 3 items, respectively. Grade expectations consist of two (2) items. However, only one item was included in this study. The item on "what grade you expect from this class" was not included in this study. Besides, the questionnaire also assessed the general characteristics of the respondents'.

Data Collection Procedure

The Research Management Centre approved the study on 1st June 2020. Online permission was obtained from the respondents using a separate section in Google forms before collecting the data of this study. The respondents of this study were communicated using the Email addresses registered with the University Learning Management System and Google forms had been shared. The respondents were allowed to respond as per their convenience.

The scoring of the data was prepared as follows. Responses were made on a 4-point Likert scale ranging from 1 point for "strongly disagree to 4 points for strongly agree. Higher scores indicated better E-learning quality. The 4-point Likert scale was further dichotomized for data interpretation purposes (Strongly agree & agree = Positive agreement; Disagree and strongly disagree = Negative agreement). Two items on behavioural intentions "Would you recommend this e-learning to someone else?" and "Would you report any problems you find while you are still enrolled in the program?" and one item regarding satisfaction with E-learning "Would you agree to say that "I am satisfied with my opportunities to enrol in online classes?" was scored using the dichotomous scale. The overall "Reliability" of the SEVQUAL questionnaire in the main survey was Cronbach's ∞ = 0.923.

Data Analysis

The collected data were analysed using the SPSS 26.0 version, and the main variables were normally distributed according to the Kolmogorov-Smirnov test. All the 34 items were analysed using frequency, percentage, mean and standard deviation. The "Reliability" of the questionnaires was calculated using Cronbach's ∞. The association between the different constructs in the study was determined using the Pearson correlation coefficient.

RESULTS

Demographic Profile of the Respondents

Table 1 shows the demographic profile characteristics of the respondents. The majority of the respondents (92%) were females aged 20-25 years and were Malays (82%). Ninety percent of students were from the Diploma in nursing programs undergoing year 2 of the training (57%).

Table 1: Demographic Characteristics of Sample Nursing Student Respondents

Variables	Characteristics	Frequency (N)	Valid Percent (%)
Age	< 20 years	83	52
	20-25 years	61	38
	>25 years	16	10
Gender	Female	147	92
	Male	13	8
Ethnicity	Malay	130	81
	Chinese	13	8
	Indian	13	8
	Others	4	3
Type of Program	Diploma	144	90
	Bachelor	16	10
Level of program	Year 1	19	12
	Year2	91	57
	Year 3	50	31
Monthly income of family	<1000	37	23
	1001-5000	91	57
	5001-10000	23	14
	10001-15000	7	4
	>15000	1	0.6

Perception of E-learning Quality Dimensions

Table 1 shows that all the five (5) constructs had a positive agreement on a 4-point Likert scale from strongly disagree to strongly agree. The construct on "Empathy" was rated to have positive quality experience (M=12.24/16; SD=1.4). "Assurance" of the lecturer also had a high positive agreement level (M= 12.71/16; SD =1.5). Quality of experience towards the "'Responsiveness'" of lecturers also had been highly in agreement with a positive rating (M= 9.41/12; SD = 1.29) and "Reliability" (M=9.29/12, SD=1.27). 'Web content' had a comparatively low mean score among the five (5) quality dimensions (M= 24.1/32; SD=2.82).

Table 1: Overall Perception of E-learning Quality Dimensions (N=160)

	Minimum	Maximum	Mean (M)	Std. Deviation (SD)	Std. Error (SE)	Reliability (Cronbach alpha)
Empathy	8.00	16.00	12.24	1.4	0.11	0.766
Assurance	8.00	16.00	12.71	1.5	0.12	0.813
Responsiveness	6.00	12.00	9.41	1.29	0.11	0.676
Reliable	5.00	12.00	9.29	1.27	0.1	0.781
Webcontent	15.00	32.00	24.1	2.82	0.22	0.913

As observed in Table 2, all the items had a positive agreement from the respondents in determining the

quality of experience with E-learning. Regarding "Empathy," the item which had the highest positive rating (98%) was "the Lecturers encourages and motivates the students to do their best" (Q4, 3.2/4). The item "the Lecturers understand the individual needs of students" had the lowest positive rating with 87% rating positively (Q2, 2.9/4). As observed in Table 3, the other three constructs on "Assurance," "Responsiveness," and "Reliability" also was rated all the items positively.

The construct of 'Web content' referred to the quality of the resources provides by the lecturers in meeting the learning objectives of the students. This section had eight (8) items. "The web site provides useful information" was the most highly positively rated item in this category (96%). The item on "the web site provides high-quality information" had been rated relatively low, with 88% of the respondent rating positively.

Table 2: Perception of E-learning Quality Dimensions

	Items	Strongly agree/agree		Disagree/Strongly disagree		Mean	SD
		f	*%*	*f*	*%*		
	Lecturers' attributes						
	"Empathy"						
1	The Lecturers are genuinely concerned about the students.	152	95	8	5	3.1	0.47
2	The Lecturers understand the individual needs of students	139	87	21	13	2.9	0.49
3	The Lecturers has the students' best long-term interest in mind	145	91	15	9	3	0.40
4	The Lecturers encourages and motivates the students to do their best	157	98	3	2	3.2	0.45
	"Assurance"						
5	The Lecturers is knowledgeable in his/her field.	156	98	4	2	3.3	0.49
6	The Lecturers is fair and impartial in grading	156	97	3	3	3.1	0.37
7	The Lecturers answers all questions thoroughly	154	97	5	3	3.2	0.49
8	I am confident the Lecturers has an expert understanding of the material	153	96	6	4	3.2	0.52
	"Responsiveness"						
9	The Lecturers quickly and efficiently respond to students' needs.	148	93	11	7	3.7	0.49
10	The Lecturers are willing to go out of his/her way to help students	144	90	6	10	3.0	0.67
11	The Lecturers always welcomes students' questions and comments	160	100	-	-	3.3	0.46
	"Reliability"						
12	The Lecturers consistently provides good online lectures.	143	89	15	11	3.0	0.56
13	The Lecturers are dependable.	145	91	14	9	3.0	0.51
14	The Lecturers reliably corrects information when needed.	157	98	3	2	3.2	0.43
	Web content in the Learning Management System						
15	The web site uses audio elements properly.	142	90	16	10	2.9	0.5
16	The web site uses video elements properly.	142	90	16	10	3	0.5
17	The web site uses multimedia features properly.	147	92	13	8	3	0.4
18	The web site uses animations/graphics properly.	144	90	16	10	3	0.5
19	The web site provides useful information.	153	96	7	4	3	0.4
20	The web site provides accurate information	151	84	9	6	3	0.4
21	The web site provides high-quality information.	141	88	19	12	2.9	0.5
22	The information on the web site is relevant to me.	145	91	15	9	2.9	0.4

E-learning Quality

Table 3 shows the three items were on a 4- point Likert scale. 'The instructional web site seems to be up to date' had the highest positive rating (92%). "The instructional web site works well" had the lowest agreement with 85% rating their experience as a positive one.

Table 3: E-learning Quality

	Items	Strongly agree/agree		Disagree/Strongly disagree		Mean	SD
		f	*%*	*f*	*%*		
1	The instructional web site seems to be up to date.	146	92	14	8	3	0.4
2	The instructional web site works well.	136	85	24	15	2.9	0.5
3	The instructional web site has clear instructions	139	87	21	13	2.9	0.5

The construct E-learning quality had four (4) items. Table 3 shows that three items were on a 4- point Likert scale. 'The instructional web site seems to be up to date' had the highest positive rating (92%). "The instructional web site works well" had the lowest agreement with 85% rating their experience as a positive one. "Your perception of the overall quality of the instruction you get from E-learning" was rated on a 5-point rating scale with 5=excellent and 1=poor. The majority (50%) rated the perception of the overall quality of E-learning experience as average. Twenty-nine percentage rated as good and 3% rated as excellent.

Behavioral Intentions

The behavioural intentions to continue with the E-learning for the future was assessed using three questions. Two questions were on a dichotomous scale of definitely would or definitely would not. For the question "Would you recommend this E-learning to someone else?" 62% (n=98) agreed that they would recommend to others. For the next item, had a positive rating by 81% (n=130) of the respondents. "Would you report any problems you find while you are still enrolled in the program?

The third question was evaluated using 4 points Likert scale as "I know I get good value for the fee I paid for e-learning" had a very low agreement (M=2.5/4, SD=0.8).

Satisfaction with E-learning

As presented in Table 4, there was a total of three (3) items for the scale to measure satisfaction with E-learning. These three (3) items were collected using a 4-point Likert range. The rating had a borderline majority. The highest positive response was for the item "would you agree to say that "I think I did the right thing when I enrolled for E-learning classes," with 59% respondents rated positively. An additional item on a dichotomous scale, "Would you agree to say that I am satisfied with my opportunities to enroll in online classes?" showed the majority (56%) responded positively to satisfaction with E-learning.

Table 4: Satisfaction with E-learning

	Items	Strongly agree/agree		Disagree/Strongly disagree		Mean	SD
		f	*%*	*f*	*%*		
1	Would you agree to say that "My choice to enrol in online classes was a wise one?"	89	56	71	44	2.5	0.76
2	Would you agree to say that "I think I did the right thing when I enrolled for E-learning classes?"	94	59	66	41	2.5	0.8
3	Would you agree to say that "I feel that my experience with E-learning has been enjoyable?"	92	58	68	42	2.5	0.79

Grade Expectations

The item was "I expect to do very well (I did very well) in this online class" had a very low margin of positive rating by the nursing students (M=2.5/4, SD =0.77).

Correlation Studies

A Pearson product-moment correlation coefficient was computed to assess the relationship between E-learning quality and five quality domains of the SERVQUAL questionnaire.

Table 5: Relationship between E-Learning Quality with Different Quality Dimensions (N=160)

Variables	Pearson Correlation (r)	Sig. (2-tailed) (p-value)
Empathy	0.468	0.000
Assurance	0.427	0.000
Responsiveness	0.489	0.000
Reliability	0.733	0.000
Web content	0.733	0.000
Satisfaction with E-learning	0.462	0.000
Behavioural intentions	0.185	0.019
Grade expectations	0.401	0.000

**Correlation is significant at the 0.01 level (2-tailed).*

The constructs "Empathy," "Assurance," and "Responsiveness" had moderate Correlation with E-learning quality. Increases in E-learning quality were correlated with improvements in scores for "Empathy," "Assurance," and "Responsiveness." "Reliability" and web content had a high positive Correlation with E-learning quality.

A Pearson correlation coefficient study shows that grade expectations of the students had positive Correlation with satisfaction towards E-learning ($r=0.717$; $p=0.000$) correlation is significant at the 0.01 level (2-tailed). Another Pearson correlation coefficient to identify the relationship between web content quality and satisfaction with E-learning ($r=0.469$; $p=0.000$).

DISCUSSION

The private healthcare University is committed to the robust implementation of E-learning, including E-assessment much before the COVID-19 pandemic. Guidance and training in the use of Moodle as a virtual learning environment are regularly provided to all staff, including the process to conduct Moodle online examinations. The Moodle is managed by the "Centre for Innovation in Teaching and Education" (CITE). However, during the COVID-19 pandemic, all teaching-learning activities were shifted to E-learning. Deserting students' needs and expectations and disregarding competitive forces in higher education fields eventually leads to becoming the most distinct weaknesses of a higher education institution (Mestrovic, 2017). This study was aimed to determine nursing students' quality of experience, satisfaction, behavioural intentions, and grade expectations in keeping with the E-learning during the COVID 19 pandemic.

The four attributes of lecturers like "Empathy,"

"Assurance," "Responsiveness," and "Reliability" had been rated positively by students, which shows that teachers put in a great effort in ensuring students are comfortable with E-learning. Even though the lecturers, were new to providing 100% E-learning, have demonstrated commitment in delivering the best they could during the COIVD 19 pandemic. Web content quality refers to layout and presentation along with layout of information on the website. The dimensions of web site content quality also involve quality and appropriateness of the information, types of media used to present the resources, use of images and appropriateness of overall content, and relevance of the materials to the course (Udo, Bagchi & Kirs, 2011). As mentioned by, systems and information quality have a positive relationship with students' satisfaction with E-learning (Kutlu & Alkaya, 2015). Udo, Bagchi & Kirs, (2011) in their study, also highlighted that user satisfaction is related to web content quality. This study also stressed that "Empathy" and "Assurance" of the E-learning instructors are positively related to E-learning quality In the same study, the "Responsiveness" was not significant, but "Reliability" "was partially significant with the E-learning quality and satisfaction of the students (Stodnick & Rodger, 2008). However, in this present study, both "Reliability" and "Responsiveness" of the instructors' were important determinates of E-learning quality and satisfaction. The findings suggested that the commitment of the lecturers in implementing the E-learning platform for teaching and learning during the COVID 19 pandemic. In a similar study it was showed that instructors' attitudes toward E-learning, course quality, and perceived usefulness of the E-learning platform are the vital factors affecting learners' satisfaction with E-learning (Sun *et al.*, 2008).

Similar studies using SERVQUAL have reported positive Correlation between customer satisfaction and four quality dimensions namely "Empathy," "Responsiveness," "Assurance" and "Reliability" (Qin & Prybutok, 2009)

In this study, nursing students have a partial agreement with web content provided in the LMS. As study reported that the E-learning service quality provided by the Higher education organization is determined by E-learning system quality, E-learning instructor, and course materials quality, E-learning administrative and support service quality (Pham *et al.*, 2019). The sudden shift from traditional classroom teaching and learning to E-learning was very new to the

academicians, and not all lecturers are Information and Communication Technology Savvy. This would have affected the web content quality as perceived by the students.

The study findings are in agreement with another qualitative study, which reported that the E-learning service quality provided by the Higher education organization is determined by E-learning system quality, E-learning instructor and course materials quality, and E-learning administrative and support service quality (Gohiya & Gohiya, 2020). Consistent with the findings of the study, in a similar study, the students rated online instruction as moderately satisfactory (Cole, Shelley & Swartz, 2014).

The study findings also revealed that satisfaction and behavioural intentions in continuing E-learning was related to E-learning quality. These findings agree with the results of another study in which E-learning quality is a mediating factor in determining the behavioural intentions towards E-learning (Pham *et al.*, 2019). In this study, ''Grade expectation'' was established to have a stronger positive relationship with E learners' satisfaction with the E-learning experience. This finding confirms the findings of in which grade expectations were in alignment with the satisfaction of students with E-learning (Eiszler, 2002).

Limitations

One weakness of this study could be the use of students from one university. However, the students came from different backgrounds and cultures and were enrolled in both Diploma and Bachelor of Nursing programs online.

RECOMMENDATIONS

In case of Higher, Education providers, satisfaction is a vital factor in sustaining and enlightening competitive advantage in today's highly modest E-learning environment. Higher Education institutions with online programs need to develop strategies that focus on the dimensions of e-learning quality that augments E-learners' satisfaction, which in turn can lead to positive and unrelenting behavioural intentions. Unpretentiously stated, satisfied E-learners are more likely to be loyal customers, those will continue to enrol in online programs, and endorse the program to others.

CONCLUSION

This paper describes an assessment of the E-learning experience of nursing students during the COVID 19 pandemic. The results were very encouraging, and a large percentage of students were engaged with the process of E-learning. It was found that the students generally had a positive perception of E-learning. The quality of perceived by the E-learning also had positive Correlation with the four dimensions of the SERVQUAL scale measuring the quality of experience with E-learning instructors'. Nursing students were found to be in favour of the E-learning provided the web content quality is good. The findings also revealed that the grade expectations of the students were directly proportional to the satisfaction with the E-learning experience.

Conflict of Interests

The authors declare that they have no conflict of interest.

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