

Effect of a Massive Open Online Course (MOOC) about Menstrual Disorders on Female Nursing Students' Knowledge and Satisfaction

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Abstract:

Background: Massive Open Online Courses (MOOCs) have emerged as an alternative educational platform for disseminating information globally. Universities are increasingly investing in the development of MOOCs addressing public health issues, such as menstrual disorders. These courses aim to raise awareness and provide up-to-date, evidence-based content to students and the public. In Egypt, where a high percentage of females experience menstrual disorders, creating an engaging MOOC on this topic for nursing students can empower them to manage their own symptoms and improve patient care and support. **Objective:** The study aimed to develop a MOOC on menstrual disorders for female nursing students and explore its effect on their knowledge and satisfaction. **Setting:** This pre-experimental study was conducted in the obstetrics and gynecological nursing department, faculty of Alexandria. **Subjects:** the study subjects included all (103 students) female nursing students who were enrolled in the Obstetric and Gynecological Nursing Department during the second semester of the academic year 2020-2021 and agreed to participate in the study. **Tools:** two tools were used for data collection: the Female Nursing Students' knowledge questionnaire about Menstrual Disorders and the Nursing Students' Satisfaction Scale about MOOC. **Results:** The data showed a highly significant improvement in the students' knowledge after the participation in the MOOC on menstrual disorder. A significant majority of the students expressed a high level of satisfaction with the MOOC. **Conclusion:** The MOOC had a significant positive effect on enhancing students' knowledge, thereby positively influencing their satisfaction with the course and their understanding of menstrual disorders. The MOOC's diverse features, including its flexibility, accessibility, interactive elements, visual and audio components, high-quality content, and interactive learning community likely contributed to its success in facilitating students' knowledge acquisition, and ultimately enhancing overall satisfaction. **Recommendation:** the study recommends that MOOCs can be integrated into the nursing curriculum in a way that complements and enhances the existing courses while fostering a culture of self-directed learning. Moreover, nurse educators should be provided access to necessary resources for developing MOOCs specific to their specialties and expertise.

Keywords: MOOC, menstrual disorders, knowledge, engagement, satisfaction.

Introduction

The 21st century has been characterized by significant advances in technology permeating most spheres of life. The

revolution in computers and the advent of the internet facilitated the emergence of multitudes of online learning environments. The proponents of online learning have viewed E-learning as the most appropriate

means of facilitating learning in a university environment (Darwish, 2016; Hamadan, 2022). E-learning has been popularized as an alternative or adjunct to traditional learning, which provides flexibility for not only how but also where and when students learn. Therefore, educational institutions all over the world have embraced it (James, 2022).

One of the recent and latest innovations in e-learning is MOOC, which stands for Massive Open Online Course. Massive means the course allows access to thousands or even millions of learners, which are much larger than face to face classes. Open refers to free access to the online courses curriculum, activities, and assessments and the participation in the course is usually without prerequisites, fees, limits, or any formal requirements. Online means the course is conducted online, allowing students to participate and interact with the content without the need for physical attendance in a classroom (Badi & Ali, 2016; Khalil, 2017; Chan et al., 2019). Open access and a massive number of participants seem to be the two key features of MOOC (Chan et al., 2019).

The MOOC movement supports the belief that knowledge should be freely shared by all people, regardless of their social and economic backgrounds. It was also perceived as a strategic response to the United Nations' Sustainable Development Goal 4, which seeks to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" by 2030 (Ogunyemi et al., 2022).

MOOCs are built around consistent and weekly lectures, incorporated video-based lecture material, and automated online tests, or peer-review assessments and reading documents. Additionally, students can prepare their assignments, post them online, and share their thoughts on discussion forum or educational social media. These are all often run by educational platform providers such as Udacity, EdX, and Coursera

(Pickering and Swinnerton, 2017; Chiu & Hew, 2018).

MOOCs have been used as a powerful educational resource for disseminating health-related information to the general population because of global accessibility, flexible scheduling options, and a variety of educational aids (Gandy et al., 2021). Moreover, MOOCs have been used for professional development to teach new skills as part of continuing development (Amado et al., 2022).

In recent years, MOOCs have been playing a crucial role in teaching and curriculum innovation reform in universities. A growing number of universities are offering free online courses, allowing students to experience education from some of the best institutions in the world without any cost, without leaving their homes, and without having to go through the application process (Li, 2019).

Several studies have shown that MOOCs could simplify important theoretical and practical content and enhance understanding of a particular topic while offering quality content for learners (Yamba-Yugsi et al., 2022; Tarasova et al., 2022, Yergaliyeva et al., 2022). Moreover, MOOCs increase students' engagement through incorporating interactive elements such as quizzes, discussion forums, and peer assessments, which can help to keep students engaged and motivated. These features can also provide opportunities for students to collaborate with others and receive feedback on their work (Maxwell et al., 2018). Learners' engagement is one major aspect determining students' retention in the online course and thereby, high academic achievement (Lung-Guang, 2019).

MOOCs can offer a wide range of courses. While MOOCs were originally created for students who were not enrolled at the university that was offering the course, there is a move towards universities offering free online courses to their on-campus

students allowing them to explore new areas of interest and expand their knowledge and skills in a particular subject (Li, 2019). There is a growing interest from universities to invest in developing and delivering MOOCs that address public health issues to their students as well as to the public. These courses can promote students' and public awareness to these issues by ensuring a high quality, up-to-date, and evidence-based content (Bettioli et al., 2022).

Menstrual disorders are a common health issue among adolescents and young adult females and can have a significant impact on their daily lives. In Egypt, it is estimated that 87% of females experience menstrual disorders. The most common menstrual disorder as reported by females is dysmenorrhea, followed by menorrhagia (El Esrigy et al., 2020). These disorders can be debilitating and affect their daily activities. A relatively recent study reported that these disorders can have adverse effects on both the academic performance and social relationships of female nursing students (Shehata & Abdallah, 2020). It is therefore crucial for these female students to have adequate knowledge about menstrual disorders and their treatment options (Santora, 2021).

It can be argued that developing an engaging MOOC on menstrual disorders for nursing students can provide them with comprehensive and evidence-based information that can better equip them to manage their own symptoms and enhance their overall well-being as well as provide effective and high quality of care and support to patients. Hence, the current study aimed to develop a MOOC on menstrual disorders for female nursing students and explore its effect on their knowledge and satisfaction.

Research hypotheses

The study hypothesized the following:

H1: Female nursing students who studied menstrual disorders through MOOCs exhibit

a higher knowledge level compared to their previous level.

H2: Female nursing students who studied menstrual disorders through MOOCs would report a high level of satisfaction with the course.

Materials and method

Materials

Design: A pre-experimental one group pre-test and post-test research design was used in this study.

Settings: This study was conducted at the Obstetrics and Gynecological Nursing Department, Faculty of Nursing, Alexandria University.

Subjects: The subjects of this study included all the female nursing students who were enrolled in the Obstetrics and Gynecological Nursing Department during the second semester of the academic year 2020-2021 and agreed to participate in the study. The total number of these students was 103.

Tools:

The following tools were used in this study for data collection.

Tool I: Female Nursing Students' knowledge Questionnaire about Menstrual Disorders.

This questionnaire was developed by the researcher after a thorough review of literature (Begum et al., 2016; Elizabeth, 2017; & Jacob, 2019) to assess the female nursing students' knowledge level about menstrual disorders. This questionnaire was composed of 20 questions that were divided into 10 true and false questions and 10 multiple choice questions. Responses for each question were as follows: zero for incorrect answer and one for correct answer. The total score ranged from 0-20. It was converted to percent score then distributed as follows; poor which was less than 33.3%, fair which was from 33.3% to less than 66.7% and good which was more than 66.7%. The

tool was valid and reliable, and the coefficient value was 0.88.

Tool II: Female Nursing Students' Satisfaction Scale about MOOC.

This scale was developed by the researcher after a thorough review of literatures (Aboshady et al., 2015; Khalil & Ebner, 2015; Hone & El Said, 2016; Hew et al., 2020) to assess students' satisfaction with the designed course. The scale was composed of 30 items that are divided into 7 dimensions. These dimensions include course content and objectives (6 items), multimedia (6 items), platform features (2 items), educator (9 items), interaction (3 items), time (1 item), and quizzes (3 items). Each item was rated on four-point Likert scale as follows: strongly disagree = 1, disagree = 2, agree = 3 and strongly agree = 4. The total score ranged from 30 to 120 and it was divided into three categories: low satisfaction, which was between 30 and less than 60; moderate satisfaction, which was between 60 and less than 90; and high satisfaction, which was between 90 and 120.

Attached to the previously mentioned tools a sheet that contained the students' personal and academic data such as age, marital status, GPA, e-mail, computer skills, common menstrual disorders and how they deal with these disorders. In addition, three open ended questions were also added. These questions were related to attending online courses, the benefits of attending such courses, and the obstacles faced while attending them.

Method

Approval from the Research Ethics Committee (REC) of the faculty of nursing was obtained. Permission from E-learning department at Supreme Council of Universities was obtained to upload the course on the EGYMOOC platform. Study tools were developed and tested for their content validity by five experts in the nursing education and obstetrics and gynecological

nursing fields, then the necessary amendments were made accordingly. Moreover, the study tools were tested for reliability using Cronbach's Alpha test. The tools were reliable and their coefficient values were as follows: 0.88 for tool I and 0.93 for tool II. A pilot study was carried out on 10 female students at the 3rd year in first semester of the academic year 2020-2021 to ensure the clarity and applicability of the tools and the necessary modifications were done accordingly.

Data collection phases:

The study was conducted in three phases: preparation, implementation and evaluation.

Phase I: Preparation

This phase included researcher's preparation, designing of the course and students' preparation.

1- Researcher's preparation: the researcher reviewed extensively the recent related literatures about MOOCs, their components, and how they should be designed, as well as various platforms, particularly those in Egypt. Then, the researcher observed samples of how courses were structured and designed on EGYMOOC and other platforms.

2- Course design: The design of the course encompassed various aspects such as creating the content, developing the script and storyboard, producing the videos, and scheduling the course.

3- Students' preparation:

The researcher conducted a face-to-face introductory session with the students in the classroom to explain the purpose of the research and the tools that needed to be completed. Those who consented to participate in the research signed an informed consent form.

All students in the study received a username and password to facilitate their access to the discussion forum, quizzes, and study tools. Before beginning the course,

students registered on EGYMOOC and provided their personal and academic information. A pre-test was conducted online using Tool I to evaluate the students' understanding of menstrual disorders.

Phase II: Implementation

Once the students had completed their registration on EGYMOOC, the course began. Every week, two pre-recorded video lectures were made available to the students. To access the next video, students were required to answer a quiz after each video, and they received immediate and ongoing feedback from the researcher on their quiz answers. The students were also asked to submit two assignments during the course: the first was to create a diagram explaining the physiology of menstruation, and the second was to upload a video explaining polycystic ovarian syndrome.

Regular online discussions were held between the researcher and students after each video, as per the schedule provided to them. Some students participated in the discussion by posting their questions on the discussion forum, while others read the questions and answers of their peers. The researcher monitored the students regularly to ensure their participation in the course and to track the dropout rate. This was done by checking the number of views of each video, quiz completion, assignment submission, and participation in the discussion.

Phase III: Evaluation

As soon as the course ended, an online post-test was conducted using Tool I to evaluate the students' knowledge of menstrual disorders. Additionally, Tool II was used to assess their satisfaction levels.

Ethical considerations

A written informed consent was obtained from all female nursing students. All students were assured that the participation in the study was voluntary. Students' right to withdraw from the study at

any time was emphasized. Confidentiality of collected data was ensured.

Statistical Analysis

Data were fed to the computer and analyzed using IBM SPSS software package version 20. Kolmogorov-Smirnov (K-S) and Shapiro-Wilk tests were used to test the normality of the collected data and accordingly the statistical tests were selected. Wilcoxon Signed Ranks test for comparing the ranks of one group before and after intervention.

Results

Table 1 shows distribution of female nursing students based on their personal, academic data and E-learning experience. It can be seen that nearly three quarters of students (74.7%) were at the age of twenty-one and more. Almost all of the students (98.1%) were single. In terms of academic performance, 71.8% of students had a GPA ranging from B- to B+. With regards to E-learning experience, over two-thirds of students, 70.9%, had good computer skills, but only 29.3% of them had attended online courses. The students reported that the main benefits of attending online courses were easy access, time and effort saved compared to face-to-face courses and the ability to attend multiple courses simultaneously (35.5%, 22.6%, and 22.6% respectively). Poor internet connection was the most commonly reported obstacle, with 35.5% of students citing it as a problem.

Table 2 shows the distribution of female nursing students according to their menstrual disorders. Although nearly three quarters of students (71.8%) reported experiencing menstrual disorders, 64.9% of them did not take any action to alleviate their symptoms. For those who did take action, the most common interventions were drinking warm fluids (32.4%) and taking Non-steroidal Anti-inflammatory drugs (29.7%). The most commonly reported menstrual disorders were dysmenorrhea and premenstrual syndrome, with 66.2% and 40.5% of students experiencing them, respectively.

With regards students' knowledge levels, there was a highly significant improvement in the students' knowledge after their participation in the MOOC (MH=8.572, P=0.000) (**Table 3**). The mean score of the students' knowledge after participating in course was significantly higher than their score before the course (Z=8.572, p= 0.000). After completing the course, a significant proportion of participants (85.4%) demonstrated a good level of knowledge, whereas a mere 8.7% possessed such a level of knowledge before the course began.

Table 4 showcases the satisfaction levels of students with regards to the MOOC focused on menstrual disorders. It is apparent that a significant majority (88.3%) expressed a high level of satisfaction, as indicated by the mean score of 108.58 ± 10.79 .

Table 5 presents the distribution of satisfaction among female nursing students after their participation in the developed MOOC. Regarding the course content and objectives, it was found that all students agreed that the content was easily understood and fit together as well as the course added to their knowledge about menstrual disorders. Moreover, all students disagreed that the content was uninteresting and not useful.

In terms of the multimedia design of the course, it is evident that all students agreed that the font formatting was clear and disagreed that the videos were dull, excessively long, and had unclear sound. Almost all students (99%) also agreed that the images in the videos were clear and relevant to the content. Furthermore, nearly all students (99% and 97.1%) agreed that the EGYMOOC platform was user-friendly and its features facilitated interaction with the educator and peers, respectively.

Furthermore, all students agreed that the educator is knowledgeable and enthusiastic throughout the course. They also agreed that the presentation of the content was clear,

understandable, and enjoyable. The language used was deemed easy, and the speaking speed in the videos was satisfactory. Consequently, the students expressed high satisfaction with the educator who delivered the course.

Regarding student interaction during the course, it was observed that almost all students (92%) agreed that the educator provided timely feedback. Regarding quizzes and course duration, all students agreed that the quizzes helped them assess their understanding of the content, while disagreeing that the course duration was inappropriate. Additionally, all students agreed that the learning experience through the MOOC was enjoyable, and they intended to apply what they had learned in their personal lives.

Discussion

The study's findings demonstrated a significant increase in students' knowledge after participating in a MOOC focused on menstrual disorders. The reason for this increase in knowledge could be attributed to students actively participating in various course activities such as watching videos, completing assignments, answering quizzes, and participating in discussion forums. These activities likely contributed to their understanding of the course content, resulting in improved knowledge acquisition. This finding aligns with previous studies that have shown the positive impact of engaging in learning activities on the students' understanding of the topic and knowledge enhancement (Tseng et al., 2016; Salas-Rueda et al., 2022).

Additionally, the videos recorded for the menstrual disorders course seem to have played a significant role in enhancing students' knowledge. They were designed in an engaging manner with clear visuals, appropriate font size, and a suitable tone of voice. These elements may have captured students' attention and facilitated their understanding of the content. This finding is in line with a study by Iskru and Schulzged

(2020), which concluded that videos are an effective medium for delivering learning materials.

Furthermore, the combination of audio and visual materials complemented each other, aiding information delivery and enhancing students' comprehension of the course topic. Moreover, the videos followed a sequential approach, starting with the physiology of menstruation and progressing to different types of menstrual disorders. This approach likely helped the students in the current study understand the underlying causes of these disorders and learn effective management strategies. Similar findings were observed in a study by Jung and Lee (2020), where presenting course content in a specific sequence resulted in increased knowledge and deeper understanding among learners after multiple weeks of MOOC learning.

Quizzes also may have played a role in improving students' knowledge. The quizzes given to the students after each video motivated students to study effectively and acquire more information to achieve high grades. Most students performed well in the quizzes, indicating their comprehension of the content. Those who scored poorly had the opportunity to review the videos to correct their misunderstandings. Chauhan and Goel (2017) noted that quizzes positively impact learners' attentiveness, check understanding, and improve learning outcomes.

Assignments and discussion forums further reinforced students' assimilation of the content. Students had to understand the material before preparing their assignments, and the discussion forums allowed them to clarify difficult concepts and address misunderstandings. Similar findings were reported in a study by Lei et al. (2021), which explored the effects of MOOCs in an emergency nursing course. Open discussions in the forums were found to facilitate assimilation of new information, enhance comprehension, and improve knowledge application. Similarly, Liu et al. (2022)

concluded that MOOCs, with their diverse learner community and discussion forums, create a unique and effective learning environment for developing high-order knowledge.

In addition to the significant increase in knowledge, the students' level of satisfaction with the MOOC was found to be high. The positive learning experience and knowledge acquisition may have contributed to the students' overall satisfaction with the course. This finding aligns with the notion that when students feel engaged, supported, and well-informed through the course activities and resources, their satisfaction levels tend to be higher (Chan et al., 2021). The combination of effective instructional design, interactive materials, and engaging learning experiences likely played a role in fostering a positive learning environment and ultimately enhancing students' satisfaction.

The high level of students' satisfaction in the current study can be also attributed to other factors as can be inferred from their responses in the satisfaction questionnaire about the MOOC. For instance, the use of visually appealing and high-quality elements such as images, graphs, and animations in the short video lectures captured students' attention and enhanced their concentration. Previous research on MOOCs supports these findings, highlighting the importance of high-quality design and content in promoting learner satisfaction (Silén-Lipponen et al., 2022).

Furthermore, students expressed satisfaction with the student-centered experience offered by the MOOC, which encouraged them to take ownership of their learning and engage in discussions to address difficulties. They found this approach more engaging than traditional teaching methods, which they perceived as boring. Similar findings have been reported in a study by Bralić & Divjak (2018) where students found MOOCs more interesting and preferable for their personal advancement compared to traditional lecture classes.

Furthermore, the convenience and accessibility of the MOOC also contributed to student satisfaction. Being able to access the course materials on mobile devices or laptops at any time and from anywhere allowed for flexible learning at their own pace. This aligns with a study by Yergaliyeva & Shayakhmetova (2022) indicating that ease of access to course materials outside the classroom positively impacts student satisfaction.

Moreover, the presentation style of the teacher in the MOOC played a role in student satisfaction as well. The engaging delivery, simple language, appropriate pace, and clear tone of voice kept students interested and improved their comprehension and enjoyment of the course. The teacher's presence throughout the videos created a classroom-like experience, further enhancing student engagement. Similar findings have been observed in a previous where students appreciated the clarity of explanations, simple language, and clear pronunciation by the lecturer (Nie & Hu, 2018).

However, it is worth noting that not all students may have the same level of satisfaction with MOOCs. A previous study by Mohamed et al. (2021) has found that certain students may prefer face-to-face interaction with teachers in physical classrooms and may be prone to distractions during online sessions. Individual preferences and circumstances can influence satisfaction levels with online learning experiences.

Conclusion

The findings of this study demonstrate that the MOOC had a significant positive effect on enhancing students' knowledge, thereby positively influencing their satisfaction with the course and their understanding of menstrual disorders. The MOOC's diverse features, including its flexibility, accessibility, interactive elements, visual and audio components, high-quality content, and interactive learning community likely

contributed to its success in facilitating students' knowledge acquisition, and ultimately enhancing overall satisfaction.

Recommendations

Based on the findings of the current study, the following recommendations can be made:

- Integrate MOOCs into the nursing curriculum in a way that complements and enhances the existing courses while fostering a culture of self-directed learning.
- Provide nurse educators with access to necessary resources for developing MOOCs specific to their specialties and expertise. This includes subject matter experts, instructional designers, multimedia professionals, technical resources, support staff, and marketing and promotion resources.
- Conduct qualitative research to explore the factors influencing students' engagement in MOOCs and the challenges they face during their study.

Table (1): Distribution of female nursing students according to their personal, academic data and E- learning experience.

Personal, academic data and E-learning experience	N=103	
	No	%
Age		
▪ < 21	26	25.3%
▪ ≥ 21	77	74.7%
Marital status		
▪ Single	101	98.1%
▪ Married	2	1.9 %
GPA		
▪ A (A- & A)	24	23.3%
▪ B (B-, B & B+)	74	71.8%
▪ C+	5	4.9%
Computer skills		
▪ Good	73	70.9%
▪ Very good	24	23.3%
▪ Excellent	6	5.8 %
Attending online course		
▪ No	72	70.7%
▪ Yes	31	29.3%
Benefits N =31		
Easy access to the courses	11	35.5 %
Time and effort saved	7	22.6 %
Attending different online courses simultaneously	7	22.6 %
Availability of the courses at any time	5	16.1 %
Multimedia help in understanding	1	3.2 %
Obstacles N =31		
None	9	29%
Poor internet connection	11	35.5%
Lack of interaction	7	22.5%
Time consuming	4	13 %

Table (2): Distribution of female nursing students according to their menstrual disorders

Menstrual History	N= 103	
	No	%
Having menstrual disorders		
▪ No	29	28.2%
▪ Yes	74	71.8 %
Type of menstrual disorder * N= 74		
▪ Dysmenorrhea	49	66.2%
▪ Premenstrual syndrome	30	40.5%
▪ Menorrhagia	10	13.5%
▪ Oligomenorrhea	3	4%
▪ Polymenorrhea	2	2.7%
▪ Metrorrhagia	2	2.7%
▪ Amenorrhea	1	1.35%
▪ Metropathia hemorrhagica	1	1.35%
Management of the menstrual disorders*		
▪ Did nothing	48	64.9%
▪ Drink warm fluids	24	32.4%
▪ Take non- steroidal anti-inflammatory drugs	22	29.7%
▪ Apply hot bottle on the abdomen	7	9.5%
▪ Consult physician	6	8.1 %
▪ Take a bed rest	6	8.1 %
▪ Perform abdominal massage	3	4%

* More than one answer was allowed.

Table (3): Comparison between female nursing students' knowledge levels before and after participation in the developed MOOC

Knowledge level	N=103				Test of sig.	p
	Before		After			
	No	%	No	%		
Poor	8	7.8%	0	0%	MH=8.572	0.000 *
Fair	86	83.5%	15	14.6%		
Good	9	8.7%	88	85.4%		
Min.-Max.	3.0 - 15.0		12.0 - 20.0		Z= 8.651	0.000 *
Mean ± SD	9.7 ± 2.6		15.9 ± 2.0			

MH: Marginal Homogeneity Test for Knowledge categories
 Z: Wilcoxon Signed Ranks Test for comparing between the two scores
 Statistically significant at $p \leq 0.05$

Table (4): Female nursing students' level of satisfaction after their participation in the developed MOOC

levels of satisfaction	N= 103	
	No	%
▪ Low	0	0 %
▪ Moderate	12	11.7 %
▪ High	91	88.3 %
Min. – Max.	89- 120	
Mean ±SD	108.58 ± 10.79	

Table (5) Distribution of female nursing students' satisfaction after their participation in the developed MOOC

Satisfaction	Strongly disagree		Disagree		Disagreement (total)		Agree		Strongly agree		Agreement (total)		Mean ± SD
	No	%	No	%	No	%	No	%	No	%	No	%	
Course content & objectives													
Objectives were defined	0	0%	2	1.9%	2	1.9%	26	25.2%	75	72.8%	101	98.1%	21.96 ± 2.32
Contents fit together	0	0%	0	0%	0	0%	31	30.1%	72	69.9%	103	100%	
Content was easily understood	0	0%	0	0%	0	0%	36	35%	67	65%	103	100%	
Content was not interesting	49	47.6%	54	52.4%	103	100%	0	0%	0	0%	0	0%	
Content was not useful	33	32%	70	68%	103	100%	0	0%	0	0%	0	0%	
Course added to my information	0	0%	0	0%	0	0%	31	30.1%	72	69.9%	103	100%	
Multimedia design													
Images were clear	0	0%	1	1%	1	1%	41	39.8%	61	59.2%	102	99%	21.6 ± 2.41
Images were relevant	0	0%	1	1%	1	1%	41	39.8%	61	59.2%	102	99%	
Sound from videos was unclear	34	33%	69	67%	103	100%	0	0%	0	0%	0	0%	
Video length was too long	39	37.9%	64	62.1%	103	100%	0	0%	0	0%	0	0%	
Videos were boring	40	38.8%	63	61.1%	103	100%	0	0%	0	0%	0	0%	
Font formatting was clear	0	0%	0	0%	0	0%	48	46.6%	55	53.4%	103	100%	
Platform													
Platform was user friendly	0	0%	1	1%	1	1%	60	58.2%	42	40.8%	102	99%	6.8 ± .99
Features helped in interaction	1	1%	2	1.9%	3	2.9%	52	50.5%	48	46.6%	100	97.1%	
Educator													
Educator was knowledgeable	0	0%	0	0%	0	0%	23	22.3%	80	77.7%	103	100%	33.48 ± 3.45
Educator was enthusiastic	0	0%	0	0%	0	0%	24	23.3%	79	76.7%	103	100%	
Presentation was clear	0	0%	0	0%	0	0%	24	23.3%	79	76.7%	103	100%	
Presentation was understandable	0	0%	0	0%	0	0%	26	25.2%	77	74.8%	103	100%	
Presentation was simple	0	0%	1	.9%	1	1%	30	29.1%	72	69.9%	102	99.1%	
Presentation was enjoyable	0	0%	0	0%	0	0%	32	31.1%	71	68.9%	103	100%	
Language was easy	0	0%	0	0%	0	0%	34	33%	69	67%	103	100%	
speaking speed was satisfactory	0	0%	0	0%	0	0%	36	35%	67	65%	103	100%	
I liked educator's teaching style	0	0%	1	.9%	1	1%	36	35%	66	64.1%	102	99.1%	
Interaction													
Peers interaction increased understanding	0	0%	8	7.8%	8	7.8%	47	45.6%	48	46.6%	95	92.2%	10.44 ± 1.5
Educator provided feedback	0	0%	2	1.9%	2	1.9%	44	42.7%	57	55.3%	101	98.1%	
Discussion forum was not helpful	47	45.6%	55	53.4%	102	99%	0	0%	1	1%	1	1%	
Quizzes													
Check understanding	0	0%	0	0%	0	0%	37	35.9%	66	64.1%	103	100%	3.64 ± .48
Duration													
Duration was not appropriate	0	0%	0	0%	103	100%	37	35.9%	66	64.1%	0	0%	3.48 ± .5
Learning experience was enjoyable	0	0%	0	0%	0	0%	43	41.7%	60	58.3%	103	100%	7.23 ± .87
I would apply it in personal life	0	0%	0	0%	0	0%	36	35%	67	65%	103	100%	

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