EVALUATING STUDENT SATISFACTION AND LEARNING IN ONLINE ENVIRONMENT USING THE USER EXPERIENCE QUESTIONNAIRE

Quint Nico Abergas[1], James F. Mintang[2], John Carlstien Uy[3] and Markdy Y. Orong[4]

1 Colleger of Computer Studies, Misamis University, Ozamiz City, Philippines

Abstract: Using the User Experience Questionnaire (UEQ) framework, this study assesses the learning experiences and satisfaction levels of Misamis University CCS students using the MU-OLE System. The study looks into what influences platform adoption, how satisfied users are with the interface and functionality, and other aspects that impact user experience. The findings point to a dependable and user-friendly platform with strengths in reliability, efficiency, perspicuity, and beauty. Lower stimulation and novelty scores, however, highlight the necessity of creative and captivating elements to boost user interest and drive. The study's conclusions offer practical advice for enhancing the MU-OLE System's usability and inclusivity, creating a dynamic and effective online learning environment that is suited to the requirements of a wide range of learners and teachers.

Keywords: Attractiveness, efficiency, MU-OLE system, novelty, perspicuity, satisfaction levels, stimulation, UEQ, user experience.

1. Background Information

The history of online learning environments can be traced back several decades, with significant developments occurring particularly in the late 20th and early 21st centuries. The inception of online education is often linked to the emergence of electronic mail and computer networking in the 1980s, which facilitated the creation of the first fully online courses aimed at adult education (Belarmino & Lampe, 2019). This early phase laid the groundwork for the integration of technology in educational settings, evolving into more structured online learning platforms. Online learning environment or learning management system (LMS) provides instructors with the ability to create tailored learning experiences that meet the needs of individual students and manage multiple classes worldwide. The system offers various features such as interactive websites, built-in rubrics, assessment, grading, reporting, tracking students' progress, participation, attendance, and communication tools, making it a valuable tool for creating an interactive learning environment (Alaidi et al., 2020). It provides opportunities for synchronous, asynchronous, and hybrid training, allowing for flexible and adaptable learning experiences (Sarıtaş et al., 2022). The online learning environment is suitable for blended education.

The rapid expansion of online learning gained momentum in the early 2000s, particularly with the advent of Learning Management Systems (LMS) and Massive Open Online Courses (MOOCs), which transformed the educational landscape by providing scalable and accessible learning opportunities (Li et al., 2022). The growth of online education was further accelerated by the COVID-19 pandemic, which forced educational institutions worldwide to transition to remote learning almost overnight. This sudden shift highlighted both the potential and challenges of online learning environments, as many educators and students had to adapt to new technologies and pedagogical approaches under significant time constraints (Danyluk & Burns, 2021). However, there are several problems that have been identified in the use of LMS or online learning environment.

Despite the advantages of flexibility and accessibility offered by online education, challenges such as student self-direction, engagement difficulties, and the necessity for timely feedback have been identified as significant barriers to effective learning. Moreover, the psychological impacts of this transition have been profound, with many educators reporting anxiety and adjustment challenges as they navigated the new online teaching landscape (Nazeer, 2023; Sato, 2023). Technological barriers also among the most significant challenges in online learning. Many students and educators lack access to reliable internet connections and adequate devices, which hampers their ability

to participate fully in online courses. For instance, studies have highlighted that families often prioritize devices for older children, leaving younger students without necessary resources (Spadafora et al., 2022). However, many students report feeling overwhelmed by the lack of guidance and support in developing these skills, which can lead to decreased academic performance (Achmad et al., 2021). The transition to online learning has also revealed the necessity for educators to create inclusive and equitable learning environments, as disparities in access to technology can exacerbate existing educational inequalities (Anis, 2023).

Online learning settings can have some potential advantages, nevertheless, despite these difficulties. Flexibility, which enables students to engage in learning activities at their own speed and from any place, is frequently mentioned as a major benefit. According to Collins et al. (2022), non-traditional students who might encounter physical or logistical obstacles to in-person instruction may find this flexibility especially advantageous. Technology utilization in online education can also increase student interest and satisfaction with the process (Djamdjuri & Kamilah, 2020).

The study investigates the satisfaction levels and learning experience of Misamis University CCS students with the MU-OLE System, employing a User Experience Questionnaire (UEQ) framework. The primary objectives are to discern the factors influencing students' acceptance of the online learning platform, gauge satisfaction levels regarding its functionality and user interface, and explore additional elements beyond traditional UEQ components that impact user experience.

In addition to examining variations in acceptance and satisfaction, the study aims to shed light on the implications for teaching strategies. The study intends to provide important insights that can guide tactics for enhancing the MU-OLE System and the entire online learning experience for Misamis University students by tackling these problems. The study's specific objectives are as follows;

- To determine respondent profile according to gender, and course.
- To assess the specific dimensions of user experience such as attractiveness, efficiency, perspicuity, dependability, stimulation, and novelty on online learning environment website.
- To determine the overall level of student satisfaction with the MUOLE platform among Information Technology and Computer Science students.

The findings of this study can benefit both students and instructors at Misamis University by enhancing the effectiveness of the MU-OLE System. Evaluating students' satisfaction and learning experiences provides insights into how the platform's usability and functionality influence engagement and academic success. This research also highlights challenges that students encounter in online learning, such as self-direction and access to technology, offering valuable input for improving the platform. Administrators and educators can use these insights to develop inclusive teaching strategies and optimize the system to meet the diverse needs of students. Ultimately, a well-designed online learning environment fosters satisfaction, supports student success, and ensures meaningful learning experiences.

2. Methodology

The figure below shows the process of gathering the data and how to utilize the data to get the necessary results for the study.
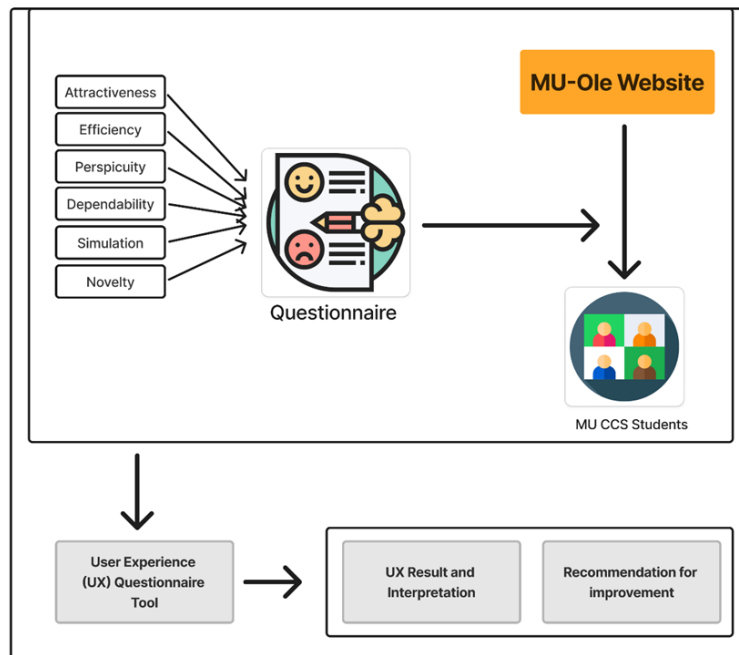
Figure 1. Research Framework of the Study

Shown in Figure 1 is the research framework of the study. There are categories that are represented in six distinct scales of the UEQ tool: attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty. The questionnaire will contain these scales with 26 questions related to the categorized scales. The respondents will be the MU CCS students and will provide their answers on the satisfaction of the MU-Ole website.

2.1 Questionnaire Development

(1) User Profile; (2) Online Learning Environment website UEQ are the three main parts of the questionnaire. Since the standard User Experience Questionnaire (UEQ) was utilized in this study without any changes, it includes all six (6) scales and a total of twenty-six (26) questions [6]. Thus, it evaluates the attractiveness, efficiency, perspicuity, dependability, stimulation, and novelty (in this case, the OLE Websites). The study's variables, which are in fact scales, are derived from the standard User Experience Questionnaire (UEQ) and are outlined in Table 1. Typical UEQ is seen in Figure 2.

Table 1. Variable used in the Study

Variable / Scale	Definition	Items
Attractiveness	Common opinion or impression concerning the website. This gives an idea if the users like or dislike the Ole Websites	1. annoying - enjoyable 2. good - bad 3. unlikable - pleasing 4. unpleasant - pleasant 5. attractive -unattractive 6. friendly - unfriendly
Efficiency	This measures if the Ole Websites are efficient and fast. It measures how effective and organize the user interface of the two websites.	1. fast - slow 2. inefficient - efficient 3. impractical - practical 4. organized - cluttered
Perspicuity	A scale that shows how easy to understand The Ole Website.	1. not understandable - understandable 2. easy to learn - difficult to learn 3. complicated – easy 4. clear - confusing

Dependability	A scale to measure the security and predictability aspects of MU-Ole.	1. unpredictable - predictable 2. obstructive - supportive 3. secure - not secure 4. meets expectations - doesn't meet expectations
Stimulation	This measures if the Ole Websites grab the interest and excitement of the users. It reflects if the user feels inspired or motivated in suing further the web services.	1. valuable - inferior 2. boring - exiting 3. not interesting – interesting 4. motivating - demotivating
Novelty	Are the Ole Website innovative and creative? Do the web services grab the interest of the users?	1. creative - dull 2. inventive - conventional 3. usual - leading edge 4. conservative - innovative

The three practical or goal-focused elements that are measured by the scales are (1) dependability, (2) efficiency, and (3) perspicuity. On the other hand, stimulation and novelty represent attributes that are neither goal-oriented or pleasure-focused. Users' reactions to attractiveness—the degree of appeal of the website—are influenced by their impressions of the other components. The questionnaire items consist of pairs of opposing concepts from which users choose the word that best captures their experience.

Figure 2. The Standard User Experience Questionnaire (UEQ)

2.2 Sample Selection

Table 2 presents the profile of the responders. One hundred college students from Misamis University (MU) took part in the survey. The MU-Ole websites were previously familiar to the respondents. Specifically, those that responded are solely enrolled in the College of Computer Studies.

2.3 Data Collection, Validity, and Reliability

The students were given access to the online survey, which asks them to rate their experience with the AI website and submit their profile. The respondents received a brief instruction on how to complete the standard questionnaire in order to offer valid and reliable answers, as the items were grouped in pairs of words having opposite meanings. The traditional UEQ scales were determined to be sufficiently trustworthy in a number of research that looked at their validity and reliability. The tool's consistency and dependability were also shown using the Cronbach's alpha value.

Table 2. Respondents of the Study

Respondents	Description	Frequency
Undergraduate Students	College of Computer Studies Students	168

2.4 Data Analysis

The UEQ scale ranges from -3 to +3, with +3 representing the most positive response, -3 the most negative, and 0 as neutral. Values above +1 indicate positive user feedback, while those below -1 reflect negative feedback. Typically, observed scale means range from -2 to +2. A mean close to +2 suggests a favorable user experience. However, since the Likert scale being used only ranges from 1 to 5, the UEQ will be modified to a scale from -2 to +2. The primary focus of the UEQ analysis lies in calculating the mean for each of the six individual scales, rather than computing an overall mean, as this would not provide meaningful insights due to the factor analysis used in constructing the scales. In standard interpretation, values between -0.8 and 0.8 indicate neutrality, values above 0.8 reflect positive opinions, and those below -0.8 suggest negative opinions. A scale is considered to indicate high quality if its mean falls between 1.5 and 2.

3. Results

To conduct the study, Google Forms was utilized as the primary platform for data collection. A total of 170 college of computer studies students from Misamis University voluntarily participated as respondents. While the recommended sample size calculated using Raosoft was 168 participants, the total number of responses gathered slightly exceeded this requirement, ensuring that the sample size was adequate for the study's purposes. The inclusion of this number of respondents enhances the reliability and validity of the results, providing a strong basis for comprehensive analysis. This robust sample size supports the derivation of meaningful insights and contributes to achieving the research objectives with confidence.

3.1 Respondent's Demographic Data

The responses of the respondents are crucial for conducting this study, but the researchers must also determine the respondents' profiles accordingly. In this study, the researchers assess the respondents' profiles based on their gender and course.
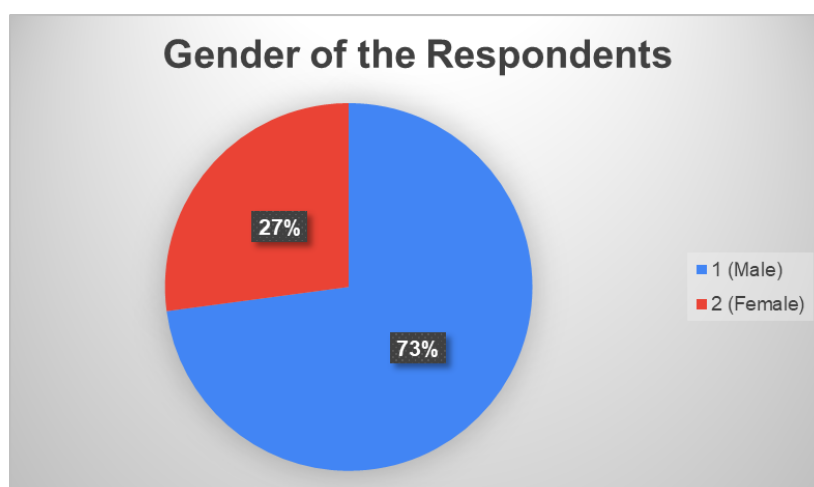

Figure 3. Pie Chart of Respondents' Gender

Responses obtained from 170 respondents based on gender are shown in figure 3. With the frequency of 124, the male respondents are calculated as 72.9% rounding up to 73%, and the 27% are the females with the frequency of 46. Due to the majority of the College of Computer Studies (CCS) students being male.
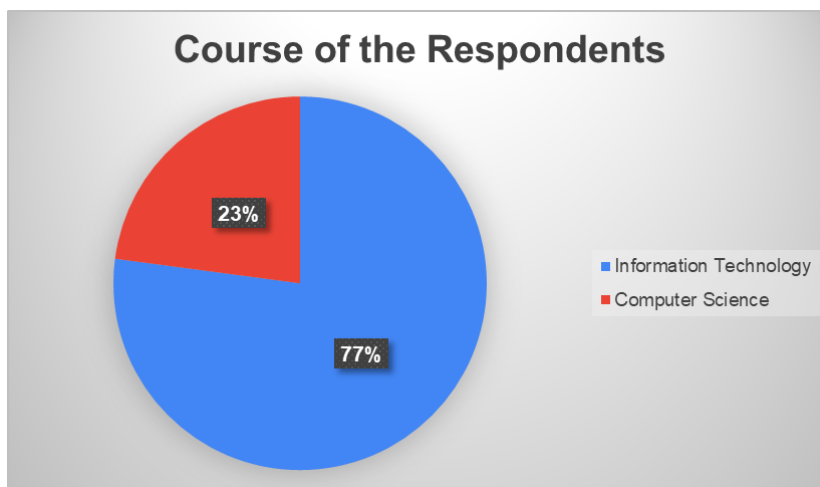

Figure 4. Pie Chart of Respondents' Course

Displayed on figure 4 is the pie chart for the courses of the respondents. Since the target college respondents for this study is the College of Computer Studies (CCS) because of the reason that they are mostly exposed to or using the MUOLE website. Seen in the chart, the highest percentage value of respondents is 77%, with the frequency of 131, and the lowest, with the value of 23%, is Computer Science with the frequency of 39. It is because the majority of enrolled courses in the CCS department are Information Technology (IT).

3.2 Means of UEQ Scales for MUOLE Website

Table 3 displays the means of the six criteria used to evaluate the MUOLE website, while Figure 3 displays its bar graph based on data from 170 respondents using the UEQ tool. The findings demonstrate that whereas the other attributes received greater than 0.8, indicating a good evaluation, the novelty and stimulation attributes received a neutral evaluation.

Table 3. Six Means of UEQ Scales for MUOLE Websites

Scale/Variable	Mean
Attractiveness	1.01
Efficiency	1
Perspicuity	0.995
Dependability	1.005
Stimulation	0.24
Novelty	0.305

A thorough summary of user experience metrics is given in Table 3, which shows the Six Means of UEQ Scales for MUOLE Websites. The findings show that "Attractiveness" had the highest mean score (1.01), closely followed by "Efficiency" (1.05), and "Dependability" (1.005). These numbers show that users had favorable opinions of these features, indicating that they thought the website was typically reliable, effective, and appealing. With a mean of 0.995, "Perspicuity" comes in second, indicating that visitors regarded the website to be reasonably easy
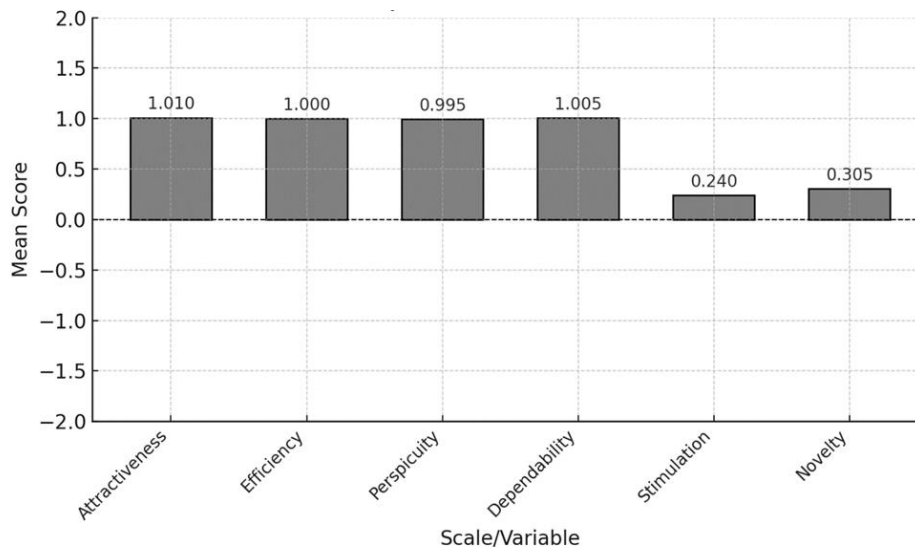
Figure 5 Bar Graph of the Six Means of UEQ Scales for MUOLE Websites

Shown in Figure 5, the bar graph of the Six Means of UEQ Scales for the MUOLE website highlights user evaluations. Attractiveness, Efficiency, Perspicuity, and Dependability received positive scores, all slightly above 1.0, indicating favorable perceptions. In contrast, Stimulation and Novelty scored much lower, at 0.240 and 0.305, suggesting a lack of engaging and innovative features. This shows the website excels in usability but has room for improvement in creating a more stimulating user experience.

4. Discussion

The study gathered responses from 170 College of Computer Studies (CCS) students at Misamis University, slightly exceeding the recommended sample size of 168 calculated via Raosoft. This ensured the adequacy of the sample for achieving the study's objectives, enhancing the reliability and validity of the results. The researchers focused on profiling respondents by gender and course to gain better insights into the target population. It was found that 73% of respondents were male, reflecting the male-dominated demographic of CCS students.

In terms of courses, the majority of participants, 77%, were enrolled in Information Technology (IT), with Computer Science students comprising the remaining 23%. This aligns with the study's objective of assessing users familiar with the MUOLE website. The demographic distribution emphasizes the relevance of CCS students as the primary respondents, ensuring the study targets users most likely to interact with the MUOLE platform. This approach enables the derivation of meaningful insights and actionable recommendations for improving the website's usability and engagement.

5. Conclusion

In conclusion, this study successfully investigated the satisfaction levels and learning experiences of Misamis University CCS students with the MU-OLE system using the User Experience Questionnaire (UEQ) framework. Guided by its objectives, the study revealed critical factors influencing students' acceptance of the platform, assessed satisfaction levels regarding its functionality and user interface, and identified additional elements beyond traditional UEQ components that impact user experience. The results provide a comprehensive understanding of how students interact with the system and its strengths and weaknesses.

The results show that the MU-OLE system performs well in important user experience characteristics, such as dependability, attractiveness, efficiency, and perspicuity, all of which were acknowledged. These metrics demonstrate how students view the platform as dependable, easy to use, and capable of fulfilling their academic requirements. The lower rankings for novelty and stimulation, however, highlight areas that need work. In order to promote increased student motivation, interest, and satisfaction, the system needs unique and engaging features.

Resolving these problems is essential to improving the user experience in general and making sure the platform facilitates an engaging and dynamic learning environment.

In keeping with the goals of the study, it also included information on the gender and course-specific profiles of the students, which can help with the creation of inclusive and focused teaching methods. The study provides practical suggestions for enhancing the MU-OLE system's usability, functionality, and general appeal by finding variances in acceptance and satisfaction. It also clarifies the wider ramifications for instructional tactics, highlighting the necessity of adding more captivating and inventive elements to the platform in order to fill in the gaps in novelty and stimulation.

The findings highlight how crucial it is to keep improving the MU-OLE system in order to accommodate the changing needs of both teachers and students. The system may create a more effective, inclusive, and engaging online learning environment by improving its design and resolving the issues found. Misamis University and other similar educational institutions looking to maximize their online learning platforms can benefit from these ideas. In the end, a well-designed system supports the school's dedication to academic excellence, guarantees relevant learning experiences, and encourages student success.

6. Recommendation

The performance response on the MUOLE website is acceptable. Even yet, it is advised to broaden and enhance the study's focus in order to offer more information on how users interact with MUOLE websites. In particular:

Explore Broader Student Demographics: Future research should consider expanding the scope to include a more diverse set of respondents across different academic levels, courses, and even external stakeholders like faculty members. This broader approach would provide a holistic understanding of user experiences and uncover additional factors affecting the acceptance and satisfaction of the MU-OLE system.

Evaluate System Performance Under Stress Conditions: The performance of the MU-OLE system during times of high usage, such exam weeks or concurrent log-ins, might be studied by researchers. Gaining insight into how the system functions in certain circumstances might help provide suggestions for enhancing stability and dependability.

References

1. Achmad, B. F., Fitriawan, A. S., Kurniawan, D., Kafil, R. F., Retnaningsih, L. N., & Setyaningsih, W. A. W. (2021). Perceived barriers in online learning among nursing students during the covid-19 pandemic in indonesia. Open Access Macedonian Journal of Medical Sciences, 9(G), 203-210. https://doi.org/10.3889/oamjms.2021.7183
2. Alaidi, A., Yahya, O., & Alrikabi, H. (2020). Using modern education technique in wasit university. International Journal of Interactive Mobile Technologies (Ijim), 14(06), 82. https://online-journals.org/index.php/i-jim/article/view/11539/6863
3. Anis, M. (2023). Promoting equity and inclusion in online learning environments: strategies for ensuring access and success for all students. Proceedings of the 6th International Academic Conference on Teaching, Learning and Education. https://doi.org/10.33422/6th.tleconf.2023.06.101
4. Belarmino, J. A. and Lampe, A. (2019). A preliminary historical report on embracing online education in occupational therapy. The Open Journal of Occupational Therapy, 7(3), 1-10. https://doi.org/10.15453/2168-6408.1554
5. Danyluk, P. and Burns, A. (2021). Experiencing the shift: how postsecondary contract and continuing faculty moved to online course delivery. Brock Education Journal, 30(2), 63. https://doi.org/10.26522/brocked.v30i2.866
6. Djamdjuri, D. and Kamilah, A. (2020). Whatsapp media in online learning during covid-19 pandemic. English Journal, 14(2), 69. https://doi.org/10.32832/english.v14i2.3792
7. Li, C., Herbert, N., Yeom, S., & Montgomery, J. (2022). Retention factors in stem education identified using learning analytics: a systematic review. Education Sciences, 12(11), 781. https://doi.org/10.3390/educsci12110781

8. Sato, S. N., Condes Moreno, E., Villanueva, A. R., Orquera Miranda, P., Chiarella, P., Bermudez, G., … & Clemente-Suárez, V. J. (2023). Psychological impacts of teaching models on ibero-american educators during covid-19. Behavioral Sciences, 13(12), 957. https://doi.org/10.3390/bs13120957

9. Sarıtaş, M., Börekci, C., & Demirel, S. (2022). Quality assurance in distance education through data mining. International Journal of Technology in Education and Science, 6(3), 443-457. https://files.eric.ed.gov/fulltext/EJ1347686.pdf

10. Spadafora, N., Reid-Westoby, C., Pottruff, M., Wang, J., & Janus, M. (2022). From full day learning to 30 minutes a day: a descriptive study of early learning during the first covid-19 pandemic school shutdown in ontario. Early Childhood Education Journal, 51(2), 287-299. https://doi.org/10.1007/s10643-021-01304-z