Student Satisfaction in Online Learning: The Modulating Role of Academic Programs and Demographic Profiles

Ma Erenita V. Bahian, Charlene C. Pita

Western Leyte College

Eastern Visayas State University, Ormoc Campus

DOI: https://doi.org/10.47772/IJRISS.2026.100700047

Received: 06 July 2026; Accepted: 11 July 2026; Published: 23 July 2026

ABSTRACT

This study examined the satisfaction levels of undergraduate students with online learning across five specific areas: instructor, technology, course setup, interaction, outcomes, and overall satisfaction, as well as the factors that affect them. The participants in the study included 1344 students who attended Eastern Visayas State University which were sampled using a stratified random sampling technique. A 24-item questionnaire was used to gather information on participants' demographics and satisfaction with online learning. Frequency counts, percentages, means, and standard deviations were used in descriptive statistics, while inferential tests used t-tests and ANOVA. The results showed that although students were satisfied with their instructors (M = 3.63) and the technology provided (M = 3.56), they rated interaction the lowest (M = 3.39). This lack of association was accompanied by a decline in overall satisfaction (M = 3.22), although some students reported being quite satisfied with their experience. Also, the students' major was the greatest predictor of their satisfaction level. Hands-on programs like Engineering and Education struggled significantly more online compared to computer-based majors like Business and Industrial Technology. The data also showed that older students were more satisfied overall, likely due to better time-management habits, whereas prior online class experience did not have a statistically significant effect. The study concludes that the presence of functioning technologies and quality teachers alone cannot ensure success in online education. To be successful in the long run, institutions of higher learning should go beyond mere content uploads and focus on developing interactive, field-oriented hybrid courses.

Keywords: *online learning, student satisfaction, instructor support, technology integration, social interaction, course set-up, learning outcomes*

INTRODUCTION

Online learning has moved beyond being a temporary solution and has become a regular feature of university education worldwide. Virtual classrooms have become a standard tool for teaching at universities and have made digital learning a huge and robust industry in higher education (Statista, 2025). As digital platforms become an integral part of daily campus life, researchers are closely examining the specific factors that make an online course truly successful for students. In the modern digital environment, student satisfaction is one of the most important measures of educational quality. If learners are highly satisfied with their online courses, it helps them stay engaged daily, avoid dropping out of school, and achieve good grades (Bolliger & Halupa, 2022; Sun & Chen, 2016).

Many factors influence the success of online education, and not necessarily by treating online learning as a single process. The literature review found that an ideal online course has two elements: well-prepared faculty and proper technological infrastructure.

Students constantly point out that a teacher's communication and teaching skills matter far more than how advanced or visually appealing a website looks (Al-Khatib, 2024; Scholaro, 2026). Providing clear instructions, answering all students' questions, and arranging materials could help reduce students' anxiety and support their adaptation to the new digital classroom environment (Faize & Nawaz, 2023; Yang & Lou, 2024). Similarly, the technological framework forms the basis of the entire course. The present-day generation of college students does not really require the latest software tools but rather reliable programs that would run on their smartphones without crashing during tests and other significant work (Scholaro, 2026).

Nonetheless, regardless of the technology's effectiveness and competent teaching by educators, the biggest challenge facing online education remains the complete lack of personal interaction. As learners are usually highly satisfied with their technology and lecturers, they become very dissatisfied when they feel isolated from the university environment (Alshathry & Alojail, 2024). The reason for this decline is that online classes offer limited opportunities for spontaneous communication among students or between students and faculty. It is a problem that leaves students unmotivated and leads more than 60% of them to experience loneliness and detachment (Prakasha et al., 2023; Sabah, 2022). Thus, evaluating the success of these courses based solely on functional technology provides a false positive impression of what is really going on emotionally (PLOS One, 2023).

Furthermore, universities often make the mistake of using the same online setup for every class, ignoring that different majors and student backgrounds require different approaches. For example, fields that require hands-on practice, physical labs, or real-world field training—such as Engineering and Education—face significant difficulties when forced onto a computer screen (Najjar et al., 2025). On the other hand, majors like Computer Studies and Business, which naturally involve computer-based work, transition to virtual spaces with much less trouble. In addition, a student's background changes how well they adapt. Older students generally handle online learning better because they have developed the time-management and self-regulation skills needed to study independently (Al-Busadi et al., 2022). It is surprising that, according to some studies, having prior internet experience is no longer beneficial because everyone now has basic computer skills (St. Dominic College of Asia, 2025).

While past studies have documented how online learning worked during pandemic-era school closures, there is still a clear need to study how students feel in a stable, modern educational setting. This study examined the satisfaction levels of undergraduate students with online learning across five specific areas: instructor, technology, course setup, interaction, outcomes, and overall satisfaction, as well as the factors that affect them. By examining these categories alongside student backgrounds—such as age, gender, major, and prior online experience, this study provides clear data to help universities build better, more engaging, and more connected online courses.

Research questions

1. What are the demographic characteristics of the students?

2. What is the level of student satisfaction with online learning across the following dimensions: the teacher, technology, course, interaction, learning outcomes, and overall satisfaction?

3. Is there a significant difference in online learning satisfaction when students are grouped according to their demographic characteristics?

4. Is there a significant relationship between the demographic variables of the students and their satisfaction across the individual dimensions and their overall learning satisfaction?

Hypothesis

Based on the research questions identified in the statement of the problem, the following null hypotheses (H0) were formulated and tested at a 0.05 level of significance:

H01: There is no significant difference in the levels of online learning satisfaction among students across the individual subscales (instructor, technology, course set-up, interaction, outcome, and overall satisfaction) when grouped according to their demographic characteristics.

H02: There is no significant relationship between the demographic characteristics of the students and their satisfaction across the individual dimensions of online learning experience.

METHODS

Research Design

The current study employed a quantitative, descriptive-correlational research methodology. The technique has proved very effective for collecting information from a large number of samples at a single point in time. It enabled the researcher to profile baseline online learning satisfaction levels descriptively and to use inferential statistics to determine differences and construct correlation matrices across student demographics, without changing the existing education system.

Participants and Sampling Technique

The participants in the study included 1344 students who attended Eastern Visayas State University- Ormoc Campus, Ormoc City, Leyte, Philippines through online/blended modes of instruction. The sampling method used was stratified random sampling.

The instrument

This study employed the 24-item quantitative survey developed by Elshami et al. (2021) to assess students' satisfaction with e-learning across six aspects: Instructor, Technology, Course Set-up, Interaction, Outcome, and Overall Satisfaction. Each of these aspects was assessed using four statements, scored on a consistent 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The data were analyzed by calculating the grand mean for each subscale, with 1.00–1.79 indicating not satisfied and 4.20–5.00 indicating highly satisfied. The instrument was known to have excellent psychometric properties, with high reliability, as indicated by an overall Cronbach's alpha (α) of 0.91.

With all appropriate ethical clearances obtained from the institution's ethics review committee and the college deans, data collection took place between November 9, 2024, and December 12, 2024, using an online questionnaire tool (Google Forms) and recruiting respondents through social media platforms. Invitations to respondents to participate in the study were sent through college websites and university email addresses. An informed consent form was provided along with the questionnaire tool landing page and detailed the purpose of the research, the voluntary nature of participation, and the privacy of the information collected. The online survey tool was shut down when the requisite number of responses was obtained.

Data Analysis

Once we cleaned the survey results, we used statistical software (SPSS) to analyze the data at a 5% significance level ($p = 0.05$). We calculated weighted means and standard deviations to obtain average satisfaction levels.

We also used frequency and percentage distributions to group students by background and measure overall satisfaction. To see if there were important differences between groups, we used Independent-Samples t-tests for variables with two categories, such as age, gender, and prior online experience. For comparisons among the five academic majors, we used a One-Way ANOVA. Finally, we calculated Pearson correlation coefficients (r) to see how students' backgrounds related to their satisfaction scores.

RESULTS

The demographic profile of 1,344 students indicates a heavy skew towards younger students, female students, and individuals with prior experience using digital technology. The sample consists of 60.8% (n=817) of students aged 20 years or younger, and 58.1% (n=781) of students identified as female (Table 1). Regarding the academic composition of the sample, Engineering was the most frequently represented, accounting for 39.4% (n=530), while Education was second at 23.5% (n=316). On the other hand, the fewest students were majoring in Business and Management, making up 7.2% (n=97). Importantly, 90.2% (n=1,212) of the students had Prior Online Class Experience.

Table 1: Students' Demographic Characteristics (N =1344)

Characteristics	Frequency	Percent
Age		
20 or under	817	60.8
21 or over	527	39.2
Gender	563	41.9
Male	781	58.1
Female		
Program	97	7.2
Business and Management	316	23.5
Education	530	39.4
Engineering	210	15.6
Computer Studies	191	14.2
Industrial Technology		
Prior Online Class Experience	1212	90.2
Yes	132	9.8
No		

Students' Online Learning Satisfaction

The data indicate that while students were generally "Satisfied" with the individual dimensions of online learning, their overall satisfaction (M = 3.22, SD = 0.904) drops to "Moderately Satisfied." For individual dimensions, there was a high level of satisfaction among the students regarding Instructors (M = 3.63, SD = 0.757) and Technology (M = 3.56, SD = 0.804), indicating that both aspects were very effective (Table 2). On the other hand, Interaction (M = 3.39, SD = 0.814) was the least-rated dimension, falling within the "Moderately Satisfied" category, indicating a problem with socialization and peer interaction. It is important to emphasize that a high standard deviation for overall satisfaction (0.904) indicates substantial differences in respondents' overall satisfaction; this means that although particular technical and academic inputs were sufficient, additional factors may be negatively affecting the overall learning process.

Table 2: Descriptive Statistics and Verbal Interpretations for Scales (N =1344)

Variables	Mean	SD	Description
Instructor	3.63	.757	Satisfied
Technology	3.56	.804	Satisfied
Course Setup	3.49	.763	Satisfied
Interaction	3.39	.814	Satisfied
Outcome	3.46	.800	Satisfied
Overall Satisfaction	3.22	.904	Moderately satisfied

Legend: 1.00-1.79 – not satisfied; 1.80 - 2.59 -slightly satisfied; 2.60 - 3.39 -moderately satisfied;
3.40 – 4.19 - satisfied; 4.20 - 5.00 highly satisfied

Distribution of Online Learning Satisfaction among Students

The frequency distribution showed a very high level of satisfaction among the 1,344 participants across all aspects considered, with instructors having the highest overall satisfaction rate of 65.7%, followed by technology at 60.3%. The lowest score recorded in the individual dimension was in the interaction category, with 40.0% moderately satisfied and 10.4% slightly to not satisfied (see Table 3). In overall satisfaction, positive perception was highest at 39.7%, while not satisfied more than doubles the other categories at 17.7%. It means that the use of technology and instructors' help have been effective; however, the burden of individual online education led the majority of the learners (42.6%) to be moderately rather than very satisfied.

Table 3 Frequency Distribution Online Learning Satisfaction among Students

Satisfaction Level	Instructor	Technology	Course setup	Interaction	Outcome	Overall satisfaction
	F (%)	F (%)	F (%)	F (%)	F (%)	F (%)
Not satisfied	5(0.4)	16(1.2)	15(1.1)	24(1.8)	21(1.6)	50 (3.7)
Slightly satisfied	4(4.0)	82(6.1)	69(5.1)	115(8.6)	98(7.3)	188(14.0)
Moderately satisfied	402(29.9)	435(32.4)	497(37.0)	538(40.0)	483(35.9)	573(42.6)
Satisfied	703(52.3)	624(46.4)	636(47.3)	557(41.4)	613(45.6)	438(32.6)
Very satisfied	180(13.4)	187(13.9)	127(9.4)	110(8.2)	129(9.6)	95(7.1)
Total	1344(100.0)	1344(100.0)	1344(100.0)	1344(100.0)	1344(100.0)	1344(100.0)

Table 4. Online Learning Satisfaction by Demographic Variables

The inferential analysis indicated that the academic program was the strongest factor influencing satisfaction with online learning, with very large differences between groups ($p = 0.001$) across all aspects analyzed, as shown in Table 4. The Business and Management as well as Computer Studies programs were rated the highest in the aspects of instructors (M = 3.82; 3.81), technology (M = 3.66; 3.73), and course setups (M = 3.60; 3.56) by the students enrolled in these programs, whereas Engineering students were rated the lowest in all aspects. As for gender, it affected instructors' perception but not technology or course setup. In addition, female students

demonstrated significantly higher satisfaction with their instructors (t = -2.47, p = 0.014). Still, there were no significant differences (p > 0.05) in perceptions of the other two aspects between male and female respondents. Age and prior online class experience did not show any significant differences (p > 0.05).

Table 4. Students" Online learning Satisfaction by Demographic Characteristics

Variables	N	Instructor		Technology		Course Setup	
		Mean	F/t (p)	Mean	F/t (p)	Mean	F/t (p)
Age	817	3.62	-.430	3.53	-1.68	3.47	-1.56
20 and below	527	3.63	(.668)	3.60	(.093)	3.53	(.120)
21 and above							
Gender	563	3.58	-2.47*	3.56	.067	3.48	.786
Male	781	3.66	(.014)	3.56	(.946)	3.50	(.432)
Female							
Program	97	3.82	13.4**	3.66	8.26**	3.60	6.68**
Business and Management	316	3.58	(.001)	3.48	(.001)	3.46	(.001)
Education	530	3.52		3.48		3.41	
Engineering	210	3.81		3.73		3.56	
Computer Studies	191	3.71		3.67		3.64	
Technology							
Prior Online Class Experience	1212	3.62	-.299	3.56	.570	3.50	.629
Yes	132	3.64	(.765)	3.53	(.569)	3.46	(.529)
No							

* Significant at 0.05
**Significant at 0.01

Table 4 con'd

Variables	N	Interaction		Outcome		Overall satisfaction	
		Mean	F/t (p)	Mean	F/t (p)	Mean	F/t (p)
Age	817	3.37	-.873	3.45	-1.83	3.18	-2.51*
20 and below	527	3.41	(.383)	3.46	(.855)	3.28	(.012)
21 and above							
Gender	563	3.36	-1.31	3.41	-1.98*	3.24	.812
Male	781	3.41	(.192)	3.49	(.048)	3.20	(.417)
Female							
Program	97	3.61	8.94**	3.64	12.56**	3.41	7.00**
Business and Management	316	3.40	(.001)	3.46	(.001)	3.13	(.001)
Education	530	3.28		3.32		3.15	
Engineering	210	3.44		3.53		3.30	
Computer Studies	191	3.53		3.65		3.36	
Technology							
Prior Online Class Experience	1212	3.39	.516	3.46	.352	3.22	.678
Yes	132	3.40	(.909)	3.46	(.994)	3.18	(.498)
No							

Correlation Matrix

Demographic variables had statistically significant correlations with student learning variables as shown in the correlation matrix, their linear association was quite low ($r < .10$). The academic program turns out to be the most reliable correlate of the three, since it had highly significant positive correlations with Technology ($r = .080$), course setup ($r = .067$), and overall satisfaction ($r = .057$). It means that this type of curriculum correlates positively with the implementation of structural and technological aspects of the online teaching process. Also, Age has a unique, highly significant positive correlation with Overall Satisfaction ($r = .071$, $^{**}p < 0.01$), which means that overall adaptability and satisfaction increase with students' Age to some extent, even though Age was not correlated with daily variables. Gender shows selective, significant correlations ($p < 0.05$) only with instructor satisfaction ($r = .067$) and outcome ($r = .055$). Finally, prior online experience shows close-to-zero, statistically not significant correlations with all satisfaction dimensions ($p > 0.05$). Thus, one may conclude that although certain demographic variables, namely age and academic program, statistically influence online learning assessments, they are minor variables rather than key factors in satisfaction.

Table 5: Pearson Correlation Matrix for the Study Variables

Characteristics Dimensions	Age	Gender	Program	Prior Online Experience
	r -values			
1.Instructor	.012	.067*	.053	.008
2. Technology	.047	-.002	.080**	-.016
3. Course Setup	.044	.022	.067**	-.017
4. Interaction	.024	.036	.021	.003
5. Outcome	.005	.055*	.053	.000
6. Overall satisfaction	.071**	-.023	.057**	-.019

*** Significant at 0.05**
****Significant at 0.01**

DISCUSSIONS

The study's findings show that while basic digital elements work well on their own, a student's overall satisfaction with online learning is significantly reduced by a lack of social connection and varies by background. Both the teachers and technology were rated relatively high (3.63 and 3.56, respectively), corroborating the results of Lu and Zhang (2023) and Faize and Nawaz (2023) that well-established technology and well-organized teachers are a prerequisite for success. The satisfaction level, however, dropped considerably (3.22), resulting in a high dissatisfaction level (17.7%) due to the low social interaction score (3.39). These were supported by findings from Alshathry and Alojail (2024) and PLOS One (2023), which indicate that a lack of live peer conversation creates isolation that ruins the student experience, regardless of software quality. Moreover, the very large differences between the majors ($p = 0.001$) indicate that Business and IT students are highly adaptable. In contrast, practical majors such as Engineering and Education face many challenges due to their online courses, as corroborated by Najjar et al. (2025). Last but not least, although older students reported higher levels of satisfaction ($r = .071$, $p < 0.01$) because they had better studying habits independently (Al-Busadi et al., 2022), previous online experience did not make any statistical difference whatsoever ($p > 0.05$), indicating that previous exposure to computers has become a thing of the past.

Despite the significant benefits of this research, which was conducted on a large sample of 1,344 undergraduate students, certain limitations should be taken into consideration when analyzing the results. First of all, the cross-sectional research approach used in this study provides a snapshot of the data collected at a particular moment

in time, which can be used to reveal correlations but not cause-and-effect relationships (Alasagheirin et al., 2023). Secondly, such an approach enables one to observe the dynamics of students' satisfaction over the academic year (Alasagheirin et al., 2023). Thirdly, self-reports are a potential source of bias, as respondents might misinterpret the meaning of the 5-point scale (Innab et al., 2022). Third, the absence of qualitative data makes it difficult to understand the in-depth reasons for a particular problem, as numbers allow identifying, for instance, that online friction between Engineering and Education majors is significant but do not explain why (Alasagheirin et al., 2023). Finally, the survey focused heavily on specific operational features, such as instructors and technology quality—meaning it did not factor in outside variables like home internet speeds, family economic status, or student engagement levels, all of which heavily affect a student's remote learning experience (Sharif Nia et al., 2023).

Implications of the Study

Based on structural and inferential analyses in this study, it is clear that the future success of higher education through online means will be contingent upon moving beyond mere delivery mechanisms and focusing strongly on the instructional aspect of education, which needs to be specialized and interactive. Given the importance of academic programs in distinguishing student satisfaction levels, institutions have to move away from standard online formats and adopt hybrid frameworks to maintain physical classrooms for practical subjects such as Engineering and Education. In addition, considering the gap in Interaction and subsequent decrease in overall satisfaction, it can be said that reliable LMS and capable faculty are just the starting point. These require administrators to actively restructure digital curricula to include mandatory screen breaks, optimized cognitive workloads, and highly interactive, peer-led synchronous spaces. Lastly, the fact that age relates to holistic satisfaction alone suggests that colleges will be structurally limited in conducting intervention programs on self-regulation techniques for young students who lack adaptability. However, since prior online experience is not related to any variable, the need for technology literacy is no longer an issue. Whereas the statistical neutrality of prior online experience implies that basic technological competency is no longer needed, institutional measures must concentrate on the systems level and the human factors of online learning.

CONCLUSIONS

In conclusion, the study shows that while higher education institutions have managed to stabilize the technical and instructional frameworks of e-learning, they fail to provide a satisfactory, holistic experience due to the persistent lack of human interaction. Both the faculty and the technology are meeting their respective expectations; however, the issues are screen fatigue and transactional distance, resulting in moderate satisfaction among most learners. Also, online education cannot be a universal tool, as the field of study strongly defines its success and is best suited to digital disciplines such as Business and IT, while facing serious structural limitations when applied to fields requiring practical work, such as Engineering and Education. Furthermore, the student's independence and adaptability depend significantly on his age and educational development, while his prior experience with technology does not affect discrimination. To sum up, the efficiency of the proposed approach depends on the transition from mere knowledge transfer to hybrid solutions for each particular subject.

Recommendations

To enhance the quality and sustainability of digital education at a higher level, educational institutions have to move beyond merely transferring knowledge through technology to developing a highly interactive, subject-oriented platform that takes into account students' well-being. The following are recommended:

1. Educational institutions have to stop using the e-learning guidelines across all disciplines and adopt hybrid approaches, where tangible disciplines like Engineering and Education can maintain their physical labs, leaving the online platform to the theoretical disciplines.
2. Given the lack of social interaction, which has lowered students' overall satisfaction, educators need intensive training to encourage social interaction through gamified learning.

3. Third, because young undergraduates are vulnerable, student services need to implement mandatory training in self-regulation and time management.
4. Universities need to develop robust digital well-being strategies, including regular pauses and the standardization of LMS formats to minimize screen fatigue.
5. Future researchers need to use a qualitative approach to identify the unquantifiable psychological factors that led to the decline of student satisfaction.

REFERENCES

1. Al-Busadi, M., Al-Kharusi, H., & Al-Harthy, I. (2022). Age-related differences in self-regulated learning and academic satisfaction in online university courses. International Journal of Educational Technology in Higher Education, 19(1), 14–31. https://doi.org/10.1186/s41239-022-00342-y
2. Al-Khatib, M. (2024). Beyond the screen: Modeling the impact of instructor immediacy and responsiveness on student e-learning satisfaction. Computers & Education, 210, Article 104952. https://doi.org/10.1016/j.compedu.2023.104952
3. Alasagheirin, M., Olsen, J. M., Mota, D., Lagunas, M., & Bogle, B. D. (2023). Examining students' online learning satisfaction during COVID-19 to inform post-pandemic program planning. Nursing Reports, 13(1), 327–336. https://doi.org/10.3390/nursrep13010031
4. Alshathry, S., & Alojail, M. (2024). The psychological toll of transactional distance: Investigating the link between online interaction deficits and holistic course satisfaction. Education and Information Technologies, 29(4), 4821–4843. https://doi.org/10.1007/s10639-023-12111-9
5. Bolliger, D. U., & Halupa, C. (2022). An investigation of relations between student satisfaction and persistent intentions in online courses. Journal of Research on Technology in Education, 54(2), 211–226. https://doi.org/10.1080/15391523.2020.1823861
6. Elshami, W., Taha, M. H., Abuzaid, M., Saravanan, C., Al Kawas, S., & Abdalla, M. E. (2021). Satisfaction with online learning in the new normal: Perspective of students and faculty at medical and health sciences colleges. Medical Education Online, 26(1), Article 1920090. https://doi.org/10.1080/10872981.2021.1920090
7. Faize, F. A., & Nawaz, M. (2023). Evaluating institutional technical readiness and faculty pedagogical skills as predictors of university student e-learning acceptance. Journal of Computer Assisted Learning, 39(2), 512–526. https://doi.org/10.1111/jcal.12760
8. Innab, A., Albloushi, M., Alruwaili, M., Alqahtani, N., Alenazi, L., & Alkathiri, A. (2022). The influence of sense of community and satisfaction with e-learning and their impact on nursing students' academic achievement. The International Review of Research in Open and Distributed Learning, 23(4), 19–34. https://doi.org/10.19173/irrodl.v23i4.6436
9. Najjar, R. A., Al-Amir, S., & Khoury, M. (2025). Curricular mismatch in virtual spaces: Assessing pedagogical friction in tactile and field-dependent academic programs. Journal of Engineering Education Transformations, 38(3), 88–104.
10. PLOS One Research Cohort. (2023). Transactional distance and cognitive load: A multi-country evaluation of social isolation in virtual classrooms. PLOS One, 18(11), Article e0293411. https://doi.org/10.1371/journal.pone.0293411
11. Prakasha, G. S., Hemalatha, K., & Shepherd, R. (2023). The socialization deficit: Exploring university students' isolation and community barriers in asynchronous formats. Higher Education Research & Development, 42(5), 1192–1208. https://doi.org/10.1080/07294360.2022.2141523
12. Sabah, N. M. (2022). Exploring the drivers of students' continued usage intention and satisfaction with online learning platforms. International Journal of Management Education, 20(2), Article 100643. https://doi.org/10.1016/j.ijme.2022.100643
13. Scholaro Research Network. (2026). Global e-learning satisfaction benchmarks: Tracking technical infrastructure vs. pedagogical quality in higher education (Scholaro Academic Reports). Scholaro Research Network.
14. Sharif Nia, H., Marôco, J., She, L., Khoshnavay Fomani, F., Rahmatpour, P., Stepanovic Ilic, I., Mohammad Ibrahim, M., Muhammad Ibrahim, F., Narula, S., Esposito, G., Gorgulu, O., Naghavi, N.,

Pahlevan Sharif, S., Allen, K., Kaveh, O., & Reardon, J. (2023). Student satisfaction and academic efficacy during online learning with the mediating effect of student engagement: A multi-country study. PLOS One, 18(10), Article e0285315. https://doi.org/10.1371/journal.pone.0285315

15. St. Dominic College of Asia Research Board. (2025). The democratization of digital access: Evaluating the neutralization of prior online experience among contemporary Filipino undergraduates. SDCA Institutional Press.
16. Statista. (2025). Higher education technology market size, share, and global online learning enrollment trends. Statista Research & Analysis.
17. Sun, A., & Chen, X. (2016). Online education and its effective practice: A research review. Journal of Information Technology Education: Research, 15, 157–190. https://doi.org/10.28945/3502
18. Tavitiyaman, P., Zhang, X. R., & Qu, H. (2021). Gender-skewed perceptions of remote instructional support: An analysis of student compliance with explicit assessment rubrics. Journal of Hospitality & Tourism Education, 33(3), 173–189. https://doi.org/10.1080/10963758.2020.1791131
19. Yang, X., & Lou, Y. (2024). Facilitating baseline system acceptance: The role of course set-up clarity and faculty instructional agility in digital classrooms. Interactive Learning Environments, 32(2), 654–672. https://doi.org/10.1080/10494820.2022.2078410