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Development and validation of students' satisfaction survey in flexible learning

Angelito Cabanilla Jr.
Cebu Normal University, Philippines

* Corresponding Author: **Angelito Cabanilla Jr.**

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Abstract
This study aims to develop and validate students' satisfaction in flexible learning modality. A systematic literature review was conducted to craft the survey instrument. 21-item researcher-made questionnaire was crafted with five factors emerged that may affect students' satisfaction. Face and content validity were done to test the validity of the instrument. The validated instrument was pilot-tested to 37 participating students in a state university. Results were used to test the Cronbach's alpha reliability to test the internal consistency of the instrument. It was shown that two items were deleted since it did not pass the content validity ratio. The overall Cronbach's alpha of the instrument after the deletion of 2 items were found to be 0.966 which indicates that the instruments' internal consistency is excellent. It is concluded that the instrument is shown to be valid and reliable. Hence, it is recommended that higher education institution to further validate the instrument using a bigger sample size in further studies.

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Keywords: students' satisfaction, flexible learning, instrumentation, higher education, Philippines

Introduction

Flexible learning modalities have become increasingly popular in higher education, especially after the COVID-19 pandemic (Pham & Ho, 2020; Quinco *et al*, 2022) [41, 43]. Students may now access education more effectively thanks to flexible learning modalities since they can use online tools and resources to learn anytime, anywhere. Since the beginning of the pandemic, State Universities and Colleges (SUC) in the Philippines have switched to flexible learning. Their level of readiness for this form of learning differs according to their infrastructure, faculty, and resource availability. According to Crizaldo *et al*. (2022) [16], the accessibility of resources like internet connectivity, learning management systems, and technical equipment impacts how prepared SUCs are for flexible learning. Even though flexible learning has many advantages, it is still crucial to measure how satisfied students are with it to ensure that it matches their needs in terms of education.

According to Wong and Chapman (2022) [53], institutions and learners depend on student satisfaction. They added that achieving crucial learning outcomes in higher education has also been connected to high levels of student satisfaction. This demonstrates that the institution offers high-quality instruction that satisfies the requirements and expectations of its students. Student happiness is essential in flexible learning because it can influence students' engagement and academic success. Institutions may deliver high-quality education that fulfills the needs and expectations of their students and contributes to their overall success by prioritizing student happiness and putting methods in place to improve it.

With universities and colleges worldwide adopting online and blended learning modalities to meet students' changing needs and expectations, flexible learning has become a global phenomenon. According to Thiers (2021), some universities have offered digital teaching and learning resources designed for Canadian families to utilize at home. She added that schools took out loans to provide devices to families in Singapore, and district officials in the USA require assistance with distant learning. Accessibility is one of the critical advantages of flexible learning since it enables students to access educational resources and participate in educational activities from anywhere in the world. Students who confront obstacles to traditional face-to-face training, such as physical distance, budgetary limitations, or other commitments, would benefit from this.

Students who use flexible learning can work at their own pace and according to their schedule, which helps them better juggle their personal and professional obligations. Higher student happiness and well-being may follow from this.

In the Philippines, flexible learning has brought several difficulties. For many students, especially those in rural locations, one of the major problems is the need for more reliable internet connections and access to technology. According to Barrot *et al*. (2021) [5], students in flexible learning contexts face a substantial barrier due to a lack of access to technology and internet connectivity. Many college students rely on costly and occasionally unreliable mobile data or public Wi-Fi. Another issue is the requirement for additional staff and student assistance and training in using online learning platforms and resources. According to Arciosa (2022) [2], many faculty members needed additional training and education to deliver instruction in a flexible learning environment, which had a negative impact on student engagement and satisfaction. Unequal access to education is another concern, as students from low-income households or those residing in rural places could require more resources to take online courses. The COVID-19 pandemic worsened already-existing educational disparities, with children from disadvantaged backgrounds being disproportionately affected by school closures and the shift to flexible learning, according to a report by the United Nations Children's Fund (UNICEF) Philippines (2020) and Payusan *et al*. (2022) [40].

In the Philippines, these issues have decreased student involvement, happiness, and academic success in flexible learning contexts. To guarantee that all students have equitable access to high-quality education, the government and educational institutions must address these concerns and provide the necessary resources and assistance. Therefore, this research aims to increase and confirm students' happiness with flexible learning methods. This research attempts explicitly to respond to the following queries: (1) What aspects of flexible learning mode affect students' satisfaction? (2) How valid and reliable is the survey questionnaire created to gauge students' satisfaction with using flexible learning methods?

2.0 Review of Related Literature

There are several factors that can affect student satisfaction in flexible learning environments. Such as (1) quality of the online course content and instructional materials, (2) instructor engagement and interaction, (3) effectiveness of online learning tools, (4) technical support and assistance provided by the institution, (5) self-motivation and self-regulation.

2.1 Quality of the online course content and instructional materials

The degree to which online course content and instructional materials satisfy the requirements and expectations of students and provide them the information, skills, and competencies they need to succeed in their educational endeavors is referred to as its quality. The importance of quality online course content and instructional materials cannot be overstated. They are the backbone of any effective online learning experience and are critical in ensuring learners acquire the knowledge and skills they need to succeed in their field. The following must have the components to have quality online course content and instructional materials: promotes learning, enhances engagement, increases motivation, and facilitates learning autonomy.

Effective student learning outcomes and experiences may be encouraged using high-quality online course content and instructional resources. (Johnson *et al*., 2018) [26]. High-quality course materials and teaching resources may increase students' interest in online learning. (Hew & Cheung, 2014) [22]. Using exciting and well-designed online course material may elevate students' learning motivation. (Puzziferro, 2008) [42]. Good course content and instructional materials promote learning autonomy by giving students accurate and relevant tools for self-directed learning. (Hsu & Wang, 2017) [24].

2.2 Instructor engagement and interaction

A flexible learning environment requires active participation from and interaction with the instructor. Active learning possibilities, individualized assistance and feedback, improved feeling of community among students, and credibility and trust-building are all benefits of engaging educators. Improved learning results, more motivation and engagement, and greater student satisfaction may all result from effective teacher involvement and interaction (Cabanilla & Pogoy, 2023). In flexible learning environments, instructors need to connect with and interact with students to foster a positive learning atmosphere.

Frequent teacher participation and interaction may increase student motivation and engagement in online learning. (Zimmerman, 2012). Improved learning outcomes and student performance may result from effective teacher involvement and interaction. (Zhang *et al*., 2016). Students' feeling of community and social presence in online courses may be improved through instructor participation and interaction, which would increase satisfaction. (Arbaugh, 2014). Students' happiness with online learning experiences might rise due to engaging instructors and interacting with them. (McGorry *et al*., 2017). Positive student involvement and contact with instructors may boost students' pleasure and willingness to study. (Yukselturk & Bulut, 2007).

2.3 Effectiveness of online learning tools

In a flexible learning environment, the effectiveness of online learning tools is essential. Giving students access to multimedia materials, interactive exercises, and simulations that make learning more engaging and meaningful, effective online learning tools can improve students' learning experiences (Cabanilla *et al*., 2023). Additionally, offering ease and flexibility, online learning tools help students access course materials and do leisurely projects. Aside from offering quick feedback and promoting self-directed learning, effective online learning technologies may also help students and instructors collaborate and communicate. Good online learning tools are crucial for students to study effectively and in supportive environments in flexible learning environments.

Using online learning resources, including videos, interactive tests, and discussion boards, has increased student motivation and participation in online courses. (Kim & Bonk, 2020; Mayer, 2019) [31, 36]. In adaptable learning environments, it has been discovered that the efficacy of online learning tools, including virtual laboratories, simulations, and collaboration tools, has a favorable influence on student learning results. (Liu *et al*., 2020; Rodriguez & Borokhovski, 2020) [35, 47]. Online learning technologies provide students the flexibility

and convenience to access course materials and resources whenever they want and from any place, enhancing their satisfaction with the learning process as a whole. (Joo *et al*., 2018; Wang & Hsu, 2020) [28, 5]. A tailored learning experience may be offered to students via the efficient use of online learning resources, including adaptive learning technologies and personalized learning platforms, which have improved academic achievement and student happiness. (Bawane & Spector, 2020; Papamitsiou & Economides, 2019) [6]. Online learning technologies may improve student satisfaction and the entire course experience by facilitating communication and interaction between instructors and students. (Cao & Li, 2020; Wang & Hsu, 2020) [12, 5].

2.4 Technical support and assistance provided by the institution

The institution's technological assistance and coaching ensure students' success in a flexible learning environment. Providing students with the technical support and tools to handle various issues connected to technology and online learning is crucial. Students who get excellent technical help and advice may increase their enjoyment and engagement by overcoming challenges and issues that hinder them from progressing in the course. Ultimately, this could result in improved academic achievement and learning outcomes. Additionally, receiving technical help makes students feel more united and supported, which improves their educational experience. As a result, students may show more devotion and respect to the institution due to feeling more obligated to it. Practical technological assistance and support are necessary for a flexible, productive learning environment.

According to a study by AbuShaaban and Abu-Naser (2020), technical support and assistance provided by institutions significantly improved student satisfaction and retention in online courses. Al-Azawei *et al*. (2017) found that technical support significantly reduced student stress levels in online courses. Students who received adequate technical support reported feeling more confident and capable of handling technical issues. According to a study by Stollberg *et al*. (2019) [49], providing technical support and assistance to students can improve their engagement with online learning materials. Students with access to technical support reported higher levels of engagement with course content. A study by Sahu (2016) [48] found that pr ding technical support to students in online courses can enhance their learning outcomes. Students who received technical support reported higher satisfaction with their course experience and demonstrated improved academic performance.

2.5 Self-motivation and self-regulation

Success in a flexible learning environment depends heavily on self-motivation and self-regulation. As a result, they have more autonomy and control over their educational experience, which calls for self-control and drive to complete all required readings and tasks. Strong self-motivation and self-regulation abilities increase students' likelihood of participating in class and actively taking responsibility for their education. Additionally, they are more likely to persevere and exhibit superior academic performance despite obstacles and failures. Developing self-motivation and self-regulation abilities in a flexible learning environment outside the classroom may be beneficial. They are essential life skills that one may use in various contexts in their personal and professional life.

In a flexible learning environment, self-motivated and self-regulated kids often do better academically. They are more likely to develop objectives, make a study schedule, and successfully manage their time to finish their schoolwork on time. (Bouchard & Hould, 2020) [8]. Students who are self-motivated and self-regulated in a flexible learning environment are more likely to be involved in their studies. They are more likely to engage in conversations actively, do assignments on time, and ask for assistance when necessary because they take responsibility for their education. (Kim & Bonk, 2020) [32]. Self-motivation and self-regulated students in an adaptable learning environment are more likely to be pleased with their educational experience. They have more control over their education and are more likely to succeed in their objectives, giving them pleasure and success. (Bouchard & Hould, 2020) [8].

3. Methodology

A systematic and thorough literature review was conducted to craft a survey instrument on students' satisfaction with flexible learning modalities. A literature review is a way to collect relevant and timely research on a specific topic to synthesize it into a cohesive summary of existing knowledge in the field, which prepares the research to make its argument or questions on the topic (Literature Review, n.d.). The importance of various literature was highlighted to develop a questionnaire to ensure that the instrument captures the essential aspects of the measured constructs.

A twenty-one (21) item researcher-made questionnaire after the systematic and thorough literature was crafted to evaluate students' satisfaction with the implementation of a flexible learning environment in a particular state university in the Philippines. Five (5) factors emerged that affect students' satisfaction such as (4 questions) quality of the online course content and instructional materials, (5 questions) instructor engagement and interaction, (5 questions) effectiveness of online learning tools, (4 questions) technical support and assistance provided by the institution, (3 questions) self-motivation and self-regulation. These were rated using a Likert scale of 5: (1) not evident, (2) fairly evident, (3) evident, (4) moderately evident, and (5) highly evident.

The development of the 21-item questionnaire was validated using face and content validity. Five (5) experts on the topic were purposively chosen to test the instrument's validity. Face validity is a test that determines whether the questionnaire's design and language choices are appropriate for the study's participants (Kamis *et al*., 2012). By assessing the elements that should be present in the study, for example, content validity aims to guarantee that the built items match the requirements of the study construct (Creswell, 2012). The judge's assessment of whether the percentage of content covered on the exam matches the percentage of content in the domain was used to calculate the content validity using the content validity ratio. According to Zamanzadeh *et al*. (2015), the formula for the content validity ratio is CVR=(Ne - N/2)/(N/2), where Ne is the number of panelists who indicated "essential," and N is the overall number of panelists.

After the validation of the instrument, the 21-item questionnaire was encoded in a Google form to conduct pilot testing and then distributed to the thirty-seven (37) participating students in the selected state university sent using social media or messaging platforms. Ethical considerations such as informed consent were integrated into

the Google form to answer the survey to prove their understanding and approval to participate in the survey. The respondents were informed that the data collected would not be disclosed to anybody or anywhere for another purpose or any way that might identify them. The respondents were also informed regarding the purpose and procedure of the study, which were included in the Google form.

Pilot testing was done to test Cronbach's alpha reliability. This is a widely used statistical measure to evaluate the internal consistency or reliability of a research instrument or questionnaire (Brown, 2022). It measures the extent to which different items in the instrument or questionnaire measure the same construct or idea. A high Cronbach's alpha value indicates the instrument's high internal consistency and reliability. Researchers commonly use a cutoff value of 0.70 or higher to indicate an acceptable level of reliability (Tavakol & Dennick, 2011) [50]. Cronbach's alpha reliability test is an essential statistical measure in evaluating research instruments or questionnaires' internal consistency and reliability. It provides a standardized approach to evaluating the reliability of research instruments across different fields, including studies related to flexible learning.

4. Results

CVR scores ranged from -1 to +1, with a number close to +1 indicating consensus among experts that the item is crucial to the authenticity of the material. According to Lawshe (1975), an item has satisfied content validity if most of the experts in the study rate it as highly important. According to Ayre and Scally (2014) [3], Lawshe's CVR index is not advised if fewer than 40 experts are reviewing the instrument. However, they have created a new, more straightforward CVR chart that includes the number of specialists needed to concur that an essential item was created. They have clarified that at least five experts must concur on an item's essentiality. For a panel size of 5, the fraction of necessary agreement must be 1. The instrument's CVR computation is displayed in Table 1 below.

Table 1: CVR computation of the developed instrument (N=5)

Item	E1	E2	E3	E4	E5	CVR	Decision
1	E	E	E	E	E	1	Accept
2	E	E	E	E	E	1	Accept
3	E	E	E	E	E	1	Accept
4	E	E	E	E	E	1	Accept
5	E	NE	E	E	E	0.6	Reject
6	E	E	E	E	E	1	Accept
7	E	E	E	E	E	1	Accept
8	E	E	E	E	E	1	Accept
9	E	E	E	E	E	1	Accept
10	E	E	E	E	E	1	Accept
11	E	E	E	E	E	1	Accept
12	E	E	E	NE	E	0.6	Reject
13	E	E	E	E	E	1	Accept
14	E	E	E	E	E	1	Accept
15	E	E	E	E	E	1	Accept
16	E	E	E	E	E	1	Accept
17	E	E	E	E	E	1	Accept
18	E	E	E	E	E	1	Accept
19	E	E	E	E	E	1	Accept
20	E	E	E	E	E	1	Accept
21	E	E	E	E	E	1	Accept

Remarks: E=Essential NE=Not Essential CVR<1 = reject

Items from 1-21 excluding 5 and 12 found to be accepted as an essential question to the satisfaction survey instrument on flexible learning modality using CVR. Numbers 5 and 12 have a CVR ratio of 0.6 which determines that it is not essential according to Ayre and Scally (2014) [3]. After determining the content validity ratio of the twenty-one (21) items in the instrument, a pilot test was conducted to check its reliability. Table 2 and 3 presents the reliability test results excluding the numbers 5 and 12.

Table 2: Scale Reliability Statistics

	Cronbach's α
Scale	0.966

Table 3: Item Reliability Statistics

No.	Mean	SD	Item-rest correlation	if item dropped Cronbach's α
1	4.19	0.811	0.815	0.963
2	4.32	0.747	0.884	0.962
3	4.32	0.709	0.806	0.963
4	4.22	0.630	0.744	0.964
6	4.38	0.681	0.825	0.963
7	4.27	0.769	0.854	0.963
8	4.41	0.686	0.861	0.963
9	4.51	0.607	0.838	0.963
10	4.38	0.794	0.605	0.966
11	4.05	0.780	0.690	0.965
13	4.32	0.669	0.686	0.965
14	4.08	0.829	0.764	0.964
15	4.27	0.652	0.801	0.963
16	3.89	0.906	0.717	0.965
17	4.19	0.811	0.825	0.963
18	4.14	0.713	0.770	0.964
19	4.19	0.701	0.631	0.965
20	4.32	0.626	0.724	0.964
21	4.43	0.647	0.685	0.965

Cronbach's alpha was used to measure the internal consistency reliability to assess the extent to which questionnaire items measure the same underlying construct (Ayre & Scally, 2014) [3]. The calculation was done to identify and eliminate items that do not contribute to the overall internal consistency of the measure. As shown in Table 2, Cronbach's alpha of the overall instrument is found to be 0.966, which indicates that its internal consistency is excellent in reference to Tavakol and Dennick's (2011) [50] rules on internal consistency. It has also been shown in Table 3 that the itemized Cronbach alpha of each item is found to be >0.9, which indicates that all items are excellent.

5. Discussion

The development of research instruments needs to be tested for validity and reliability. This is essential to ensure that the data collected in the valid and reliable instrument is accurate, consistent, and trustworthy. The validated instrument, which has two rejected items are still to be considered a valid instrument. Validity is essential since this would ensure that the study results are meaningful and can be used to make valid conclusions. This would accurately represent the construct being measured, leading to accurate conclusions. A valid instrument can measure what it is designed to measure and draw meaningful and justifiable inferences from the scores about a sample or population (DCPS, n.d.).

The results of the calculation of the internal consistency of the validated instrument are found to be reliable. This means

that the instrument ensures that the data collected is consistent and free from random error. This ensures that the instrument is measuring the construct consistently, providing confidence that the results obtained accurately represent the construct being measured. A valid and reliable instrument is crucial in developing an instrument to ensure that the data collected is accurate, consistent, and trustworthy. This would ensure that the study results are meaningful and can be used to make valid conclusions, providing valuable insights and contributions to the field. After testing the instrument's validity and reliability, it resulted from a 21-item questionnaire to a 19-item valid and reliable instrument.

Item 5 rejected based on the CVR computation from the result of the evaluation of the five experts. Item number 5 stated that frequent instructor engagement and interaction could increase motivation and engagement in the students' online learning. One expert said that independent learning is encouraged in a flexible learning modality setup, and there is no need for frequent engagement. Online learning in flexible learning is an opportunity to develop self-directed learners (Peters, 2003, as cited by Garrison, 2009) [21]. This means that flexible learning is designed to promote independent learning and self-direction. Frequent interaction with teachers might hinder the development of being independent. Occasional interaction and support should still be available to address students' needs to balance independent learning and access to guidance to contribute to a successful flexible learning experience.

Item 12 was also rejected based on the CVR computation, which states that online learning tools provide students with the convenience and flexibility to access course materials and resources at any time and from any location, which has been found to improve students' satisfaction and overall course experience. One expert commented that it is not evident at all times. The convenience and flexibility offered by online learning tools might not always align with students' experiences. Factors such as technical issues, internet connectivity problems, or limited availability of resources could not satisfy student satisfaction. According to Bolliger (2004) [7], students must have access to reliable equipment and be familiar with the technology used in the course to succeed. Students with limited online access are at a considerable disadvantage. Online access is one of the most important factors influencing student satisfaction—students who report frustration with technology report lower satisfaction levels (Chong, 1998) [13].

Institutions should prioritize the factors determining students' satisfaction to guarantee successful learning in a flexible learning setup. The five determined factors in students' satisfaction with flexible learning are essential for students to succeed in a flexible learning modality, to foster a good learning experience, to make the learning process more effective and exciting, to assist students in overcoming technological challenges and ensuring a smooth learning experience, and to ensure successful learning. These elements are crucial in developing a fulfilling and effective flexible learning environment. However, confirmatory factor analysis may validate the hypothesized relationship between observable variables and underlying factors, providing statistical evidence for the instrument's construct validity.

Overall, 19 out of 21 items were found to be valid and reliable based on the CVR computation and reliability testing. This suggests that the instrument has good content validity and internal consistency. With most items demonstrating acceptable psychometric properties, future researchers can consider adopting this instrument to evaluate students' satisfaction with the flexible learning modality. It is important to note that further validation and testing may be necessary in different contexts or populations to ensure the generalizability of the instrument's results.

6. Conclusion and Recommendation

The study's objectives were successfully met through a student satisfaction survey development, validation, and reliability testing. High-quality online course content and instructional materials, effective engagement and interaction, dependable online learning tools, adequate technical support and assistance, and a high level of self-motivation and self-regulation among students are just a few of the key elements contributing to satisfying flexible learning. Stakeholders at higher education institutions (HEIs) must prioritize the needs of the students to ensure student enjoyment in flexible learning. The survey instrument should also be further validated using a bigger sample size in future studies.

7. References

1. Adopting or Adapting Instruments. (n.d.). http://korbedpsych.com/R09aAdopt.html#:~:text=In%20general%2C%20adopting%20(using%20verbatim,have%20to%20collect%20validity%20evidence.
2. Arciosa R. Effectiveness of flexible learning in teaching college subjects amidst Covid 19 pandemic at CTE, Sultan Kudarat State University, Philippines: Effectiveness of flexible learning. International Journal of Curriculum and Instruction. 2022; 14(2):1343-1358.
3. Ayre C, Scally AJ. Critical values for Lawshe's content validity ratio: revisiting the original methods of calculation. Measurement and evaluation in counseling and development. 2014; 47(1):79-86.
4. Baker C. Quantitative research designs: Experimental, quasi-experimental, and descriptive. Evidence-based practice: An integrative approach to research, administration, and practice, 2017, 155-183.
5. Barrot JS, Llenares II, Del Rosario LS. Students' online learning challenges during the pandemic and how they cope with them: The case of the Philippines. Education and information technologies. 2021; 26(6):7321-7338.
6. Bawane J, Spector JM. Adaptive learning technologies in distance education. Distance Education. 2020; 41(2):156-172.
7. Bolliger DU. Key factors for determining student satisfaction in online courses. International Journal on E-learning. 2004; 3(1):61-67.
8. Bouchard, MF, Hould FS. Factors influencing the motivation of adult learners in distance education: A systematic review. Journal of Educational Technology & Society. 2020; 23(3):180-197.
9. Brown JD. The Cronbach alpha reliability estimate. JALT Testing & Evaluation SIG Newsletter, 2002, 6(1).
10. Cabanilla AB, Batolbatol GB, Jacaban FS, Bonotan A. Gamified Instruction in Mathematics: A Meta-Synthesis. Human Behavior, Development & Society, 2023, 24(1).
11. Cabanilla AB, Pogoy A. Teachers' Experiences in Flipped Classroom in South-East Asian Countries: A Meta-Synthesis. Jurnal Pendidikan Progresif. 2023; 13(2):218-229.
12. Cao W, Li L. Online course design factors influencing students' satisfaction and learning outcomes. Journal of

Educational Technology Development and Exchange. 2020; 13(1):1-14.
13. Chong SM. Models of asynchronous computer conferencing for collaborative learning in large college classes. In C. J. Bonk & K. S. King (Eds.), Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse. Mahwah, NJ: Lawrence Erlbaum, 1998, 157-182.
14. Collins D. Pretesting survey instruments: an overview of cognitive methods. Quality of life research. 2003; 12:229-238.
15. Creswell John W. Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research. 4th Edition. USA: Pearson Education Inc., 2012.
16. Crizaldo RS, Fabregar JRF, Alitagtag JB. Preparedness of SUCs in CALABARZON in the Implementation of Flexible Learning in the New Normal. European Online Journal of Natural and Social Sciences. 2022; 11(3):529.
17. Cronbach's Alpha: Definition, Interpretation, SPSS - Statistics How To. (2023, March 3). Statistics How To. https://www.statisticshowto.com/probability-and-statistics/statistics-definitions/cronbachs-alpha-spss/
18. Data Collection Population Sampling. (n.d.). https://slideplayer.com/slide/8594931/?cv=1
19. Du J, Havard B, Li H. Dynamic online discussion: task-oriented interaction for deep learning. Educational media international. 2005; 42(3):207-218.
20. Fisher MJ, Marshall AP. Understanding descriptive statistics. Australian critical care. 2009; 22(2):93-97.
21. Garrison R. Implications of online and blended learning for the conceptual development and practice of distance education. International Journal of E-Learning & Distance Education/Revue international du e-learning et la formation à distance. 2009; 23(2):93-104.
22. Hew KF, Cheung WS. Students' and instructors' use of massive open online courses (MOOCs): Motivations and challenges. Educational Research Review. 2014; 12:45-58.
23. Hooper D. Exploratory factor analysis, 2012.
24. Hsu CL, Wang CY. Factors affecting online learning self-efficacy and learning satisfaction: A study of adult learners in an online certificate program. Journal of Online Learning and Teaching. 2017; 13(2):33-45.
25. Irani T. Communication potential, information richness and attitude: A study of computer mediated communication in the ALN classroom. ALN magazine. 1998; 2(1):1-12.
26. Johnson N, Veletsianos G, Seaman J. U.S. faculty and administrators' experiences and approaches to online learning. Babson Survey Group, 2018.
27. Jones A. ICT and future teachers: are we preparing for e-learning?. In Information and Communication Technology and the Teacher of the Future: IFIP TC3/WG3. 1 & WG3. 3 Working Conference on ICT and the Teacher of the Future January 27–31, 2003, Melbourne, Australia. Springer US, 2003, 65-70.
28. Joo YJ, Lim KY, Kim EK. Online university students' satisfaction and persistence: Examining perceived level of presence, usefulness and ease of use as predictors in a structural model. Computers & Education. 2018; 122:145-154.
29. Kamis AB, Bakar AR, Hamzah RB, dan Soaib A. Kesahan Dan Kebolehpercayaan Instrumen Kompetensi Rekaan Fesyen Pakaian (RFP). Jurnal Pendidikan Malaysia. 2012; 37(2):11-19.
30. Kim JH, Kim MK., Lee J, Kim YJ. Investigating factors that influence social presence and learning outcomes in distance higher education. Computers & Education. 2017; 113:1-13.
31. Kim KJ, Bonk CJ. The future of online teaching and learning in higher education: The survey says Education Sciences. 2020; 10(9):233.
32. Kim KJ, Bonk CJ. The future of online teaching and learning in higher education: The survey says Educause Quarterly. 2020; 43(4):18-34.
33. Kukulska-Hulme A, Traxler J. Design for mobile and ubiquitous learning. In S. K. D'Mello, R. A. Calvo, & A. Olney (Eds.), Proceedings of the 10th International Conference on Intelligent Tutoring Systems (ITS 2012). 2013; 2:441-446. Springer.
34. Literature Review | University of Illinois Springfield. (n.d.). https://www.uis.edu/learning-hub/writing-resources/handouts/learning-hub/literature-review#:~:text=The%20purpose%20of%20a%20literature,conducting%20your%20own%20original%20researc
35. Liu Q, Peng W, Zhang F, Hu R., Li Y, Yan W. The effectiveness of blended learning in health professions: Systematic review and meta-analysis. Journal of Medical Internet Research. 2020; 22(7):e20145.
36. Mayer RE. Multimedia learning: Why it matters. Cambridge University Press, 2019.
37. McGorry SY, Green D, Ervin J. Supporting student success in online education: A comprehensive review of the literature. Online Learning Journal. 2017; 21(2):166-190.
38. Neagu A. Face Validity in the Context of Personality Assessment: An Experimental Approach. Studia Doctoralia. 2022; 13(1):69-81.
39. Papamitsiou Z, Economides AA. Learning analytics and personalized learning experience: A systematic review of literature. IEEE Transactions on Education. 2019; 62(1):56-72.
40. Payusan A, Arrofo MJ, Codilla LA, Gaco S, Dakay DK, Cortes V. Priorities and Intentions of Working-Students Working amidst COVID-19 Pandemic. The Normal Lights, 2022, 16(2).
41. Pham HH, Ho TTH. Toward a 'new normal'with e-learning in Vietnamese higher education during the post COVID-19 pandemic. Higher Education Research & Development. 2020; 39(7):1327-1331.
42. Puzziferro M. Online technologies self-efficacy and self-regulated learning as predictors of final grade and satisfaction in college-level online courses. The American Journal of Distance Education. 2008; 22(2):72-89.
43. Quinco DF, Cabanilla Jr, AB, Cadosales MNQ. Meta-Synthesis On Faculty Development During The Covid-19 Pandemic. Journal of Positive School Psychology. 2022; 6(8):981-991.
44. R Core Team R: A Language and environment for statistical computing, 2021. (Version 4.0) [Computer software]. Retrieved from https://cran.r-project.org. (R packages retrieved from MRAN snapshot 2021-04-01).
45. Rai N, Thapa B. A study on purposive sampling method in research. Kathmandu: Kathmandu School of Law, 2015, 5.

46. Revelle W. Psych: Procedures for Psychological, Psychometric, and Personality Research. [R package], 2019. Retrieved from https://cran.r-project.org/package=psych.
47. Rodriguez MC, Borokhovski E. Best practices in online learning: A systematic literature review. Journal of Interactive Online Learning. 2020; 18(1):1-24.
48. Sahu PK. Impact of e-learning on student engagement: A case study. Journal of Educational Technology & Society. 2016; 19(3):49-60.
49. Stollberg M, Taschner A, Mitschian H. Supporting learners in a MOOC: The role of computer-based scaffolding and technical support. Computers in Human Behavior. 2019; 92:500-508.
50. Tavakol M, Dennick R. Making sense of Cronbach's alpha. International journal of medical education. 2011; 2:53.
51. The jamovi project. Jamovi. (Version 1.8) [Computer Software], 2021. Retrieved from https://www.jamovi.org.
52. Wang YS, Hsu SH. The effects of online interactive tools on student engagement and learning outcomes. International Journal of Distance Education Technologies. 2020; 18(2):34-54.
53. Wong WH, Chapman E. Student satisfaction and interaction in higher education. Higher Education, 2022, 1-22.
54. Yukselturk E, Bulut S. Predictors for student success in an online course. Educational Technology & Society. 2007; 10(2):71-83.
55. Zamanzadeh V, Ghahramanian A, Rassouli M, Abbaszadeh A, Majd HA, Nikanfar A. Design and Implementation Content Validity Study: Development of an instrument for measuring Patient-Centered Communication. Journal of Caring Sciences. 2015; 4(2):165-178. https://doi.org/10.15171/jcs.2015.017
56. Zhang W, Liu X, Chen L. The impact of instructor interaction on student achievement in online courses: A meta-analysis. Educational Technology & Society. 2016; 19(4):256-268.
57. Zimmerman TD. Exploring the relationship between student engagement and instructor immediacy in online learning. Journal of Online Learning and Teaching. 2012; 8(3):164-175.