Readiness Level, Satisfaction Indicators, and Overall Satisfaction towards Flexible Learning through the Lens of Public University Teacher Education Students

Jahfet N. Nabayra* and Clarita R. Tambong

***Abstract*—This study determined public state university students' readiness level to new normal education, satisfaction level to flexible learning modality, and the association of the two variables. A total of 372 undergraduate teacher education students were included as respondents. Validated and reliability tested researcher-made survey questionnaires on readiness and satisfaction were utilized in the study and were analyzed through descriptive and correlational data analysis tools. Results reveal that most of the students are prepared for new normal education especially in terms of technological readiness. However, it was found that the students were only slightly ready in terms of economic aspects. Students were satisfied with the implemented flexible learning modality of the college particularly with the management of learning. This was attributed highly to the course content, learning materials, learning activities, and teachers' strategies. Moreover, the students' readiness for the new normal education and satisfaction with flexible learning are positively related. Findings of this study suggests that teaching and learning process, course materials (quality, accessibility, and completeness), and course content are influential to students' overall satisfaction with a learning modality. Higher education institutions should consider students' economic, technological, and personal readiness in the decision-making process of adopting or implementing a new learning modality. This study provides empirical information that may be useful for policy makers and administrators in reviewing and enhancing the new normal education system, crafting, and proposing curricular innovations, starting instructional initiatives, and making sustainable learning continuity plans.**

***Index Terms*—Flexible learning, new normal, satisfaction level, readiness level, undergraduate students**

I. Introduction

The advent of the new normal education has brought about both changes and challenges for all stakeholders of the academic world. The underlying cause, COVID-19 pandemic, had record-breaking effects on almost every aspect of the society [1, 2]. It can also be inferred that this pandemic has brought into the world the largest education crisis ever recorded in history. This led to the abrupt adoption of a totally uncommon approach to teaching and education—online, remote teaching approach [3–5].

Philippines, like any other nation, also needed to adjust and cope with the challenge of a new learning modality. The sudden implementation of the remote, online, or distance learning modality has become a persisting challenge even up to today. Some of the challenges and issues that came along with the implementation of the new normal education includes assessment, plagiarism, safety of learners and teachers, transfer of learning, power disruptions, internet connection, financial problems, lack/availability of resources, time management, course difficulty, academic stress, economic downturn, and unemployment [6–12].

Additionally, these remote and flexible learning initiatives must be planned well, implemented appropriately, and evaluated objectively to ensure that students to still acquire the quality of education that they deserve even amid a pandemic. There have been different remedies adopted by institutions to address the need of time [13, 14] which includes rethinking more learner-centered methodologies and quality learning environment and instructional innovations in various courses [15–18]. Although efforts have been exerted by educational institutions to make learning effective, the boons and the banes of this new normal way of learning were exposed by the actual views of teachers and learners [19, 20]. In particular, students still encounter problems with the delivery of learning [21].

These new learning modalities are absolutely different from the traditional brick and mortar set-up because students are required to use technology-enabled systems to learn virtually, and distractions are everywhere at home [22, 23]. This makes flexible learning modalities like online learning extremely challenging.

However, previous studies are only limited to whether students are economically, technologically, and personally ready in this urgent transition of modality from traditional to flexible learning or were they satisfied to the learning modalities implemented amid the crisis in terms of the teaching and learning process, course content, and materials. Existing studies presented different findings, from different perspectives, on readiness and satisfaction. One study reports that students in Malaysia are generally ready [24], while students in the Philippines are least ready [25] and not fully equipped [26]. There are few studies on students' learning readiness [27]. Reimers and Schleicher [28] advanced that majority of the youths from diverse institutions were not prepared to learn online. Some studies also explored the relationship between e-learning readiness and academic performance, online structure, and interaction [29, 30]. For Widodo *et al*. [31], student readiness for online learning can be assessed clearly from the aspects of equipment capability, technology skills, self-directed learning skills, and motivation. Higher Education Institutions (HEIs) in the Philippines must consider indicators like financial stability, network

Manuscript received February 17, 2023; revised April 21, 2023; accepted May 5, 2023.

Jahfet N. Nabayra and Clarita R. Tambong are with the College of Teacher Education of Aklan State University, Banga, Aklan, Philippines.

*Correspondence: jnabayra@asu.edu.ph (J.N.N.)

doi: 10.18178/ijiet.2023.13.8.1925

accessibility, technical equipment, and digital knowledge [32] in assessing the readiness of students to a proposed learning modality. Considering these gaps, these factors were considered in the assessment of students' readiness in this study.

In addition, satisfaction with online or flexible learning is critical in the quality of educational practices. Elshami *et al.* [33] found out that students have lesser satisfaction level compared to faculty members. Furthermore, students' background, experience, engagements and collaborations, and agency positively influence students' satisfaction [34]. A systematic review conducted by Ranadewa *et al.* [35] advanced that learner satisfaction and learner commitment are significantly influenced by many indicators like academic issues, accessibility issues, technological skills, mental well-being, and lecturer commitment. Moreover, concerns in the academe have affected learning satisfaction of the learners [36–39]. In addition, problems on accessibility like poor network connection to access educational activities were also some of the factors affecting students' satisfaction on distance learning and flexible learning modalities [40–42].

These existing studies, however, only slightly explored students' readiness to new normal education in terms of economic, technology, and personal aspects. Cortez [43] reports that economic and technological readiness should also be considered in understanding and implementing flexible learning. He also agrees that there is limited literature studying the satisfaction of students with the teaching and learning process, instructional materials, and course content. Moreover, the relationship between these two significant variables in the new normal education system among higher education institutions must be investigated: while also considering the different indicators of students' satisfaction on flexible learning modalities.

Despite the many studies revolving around the pandemic-induced new normal education, there are very limited studies that tackle the students' readiness to new normal education emphasizing the technological, economic, and personal readiness and satisfaction to various learning modalities. Hence, this study focused on students' readiness level and satisfaction indicators. Furthermore, this paper discusses how these variables cohere with the overall satisfaction of the students in flexible learning. The findings of this study may help the college and the institution recalibrate learning plans and innovate modalities that will effectively work even in the post-pandemic world.

II. Literature Review

A. Theoretical and Conceptual Background

Readiness would commonly imply that "a teacher can only teach a student if that student is willing to learn" [44]. However, online learning readiness and flexible learning varies from different perspectives. This concept has been explored in different studies on online learning and distance learning [45, 46].

Readiness in distance learning pertains to "students' preparation to learn successfully in a flexible or online learning environment" [30, 47]. It must be examined in terms of two qualities: technology and student attributes [48]. E-learning readiness is defined as "the mental or physical preparedness of a certain institution" [49]. It gives cogent data to the institution on preparations before the implementation of a learning modality. Some studies amidst the pandemic provide insight about student readiness in the new normal learning set-up. The concept of learning readiness was associated with different variables as examined by previous studies. It was found that readiness in online learning is positively correlated with student performance [50–52].

In terms of learning satisfaction, Weerasinghe and Fernando [53] viewed it to be the result of the assessment of experiences in education which is related to the learning value experiences of the students [54]. Online learning satisfaction is multi-dimensional. It involves factors like participation, communication, instructional support, student study loads, and flexibility of learning [47, 55]. Factors affecting student satisfaction in online and flexible learning include instructors, interaction, and technology materials [56, 57].

In addition, several studies present different findings surrounding various variables related to student satisfaction like its positive relationship with academic performance and engagement [58, 59]. Dziuban [60] found "three under-lying satisfaction components: engaged learning, agency, and assessment. The factor scores comparisons indicate that students in the general satisfaction categories characterize important differences in engaged learning and agency. Students' background, experience, collaborations, interactions, and autonomy positively influenced students' satisfaction". Moreover, theories in learning have also given a clearer perspective in understanding satisfaction and learning. Findings support the integrative association between Transactional Distance Theory and Bloom's Taxonomy Theory in relation to using online learning platforms to improve students' satisfaction, which could help decision makers in universities and higher education and colleges to plan, evaluate, and implement online learning platforms in their institutions" [34]. In particular, students' academic achievements were positively impacted by their application, remembering, understanding, analyzing, and satisfaction of the subject or topic. Hence, satisfaction of the students to flexible learning modalities is a crucial factor that needs to be considered when making decisions aimed at advancing educational activities for the students and the institution [61].

B. Related Studies

Most educational institutions and agencies around the world used to deliver education in a traditional set-up (i.e., face-to-face or classroom set-up). The unprecedented pandemic has forced institutions to go for emergency remote teaching (ERT) due to class suspensions [62]. Eventually, this gradually moved to the new normal learning [4, 5]. The abrupt shift to ERT received various reactions from students and teachers [63]. It is worthy to note that ERT is different from online learning/teaching [64]. However, the transition from emergency remote learning to new normal learning spawned challenges for both students and teachers [65]. In Kenya, a study [66] concluded that flexible and blended learning approaches can offer a variety of solutions to the prevailing challenges of teaching and learning in Kenyan institutions.

These challenges range from issues of equity in access to learning, student-teacher ratio, technological and innovation developments, dropout concerns, contemporary concerns of pandemic to diseases that may constrain face-to-face interactions. d'Orville [67] argued that resilience and adaptability are crucial factors to successfully navigate the pandemic and other future crisis ahead.

The pandemic has forced traditional models of learning to be changed to e-learning and other flexible learning modalities that has become the new normal in learning [68, 69]. However, flexible online learning has limited teacher-student interactions [70]. Friedman [71] enumerated majority of the challenges: technological difficulties, interruption, organizational skills, lack of motivation, understanding learning objectives, lack of peer review and direct interaction, adjusting to different technological advancements, and fear of the future. Several factors that need to be improved are materials, interaction, facilities, and lecturers [63]. Thus, learning institutions must focus on developing online teaching competencies of teachers including instructional material development skills [5].

Moreover, several studies also explored students' readiness and satisfaction with the new normal way of learning. However, there is little to no research studies that examine the relationship between student readiness to new normal education and their satisfaction to flexible learning modalities. In the study of Kamaruzaman *et al.* [68], Malaysian students' perception towards distance education readiness was examined. It was found that the readiness of online learning can be assessed through the five main indicators: (1) motivation, (2) possession of facilities or equipment for online learning, (3) capability to assess and use technology, (4) usefulness of online learning and (5) self-directed learning. Analogous results were identified by Olayemi *et al.* [72] revealing that most Nigerian students claimed to be conversant with online learning with a high level of readiness especially with ICT competencies required for online learning. However, data charges, poor network connection, power interruptions, inaccessibility to materials and resources and limited access were the major challenges discovered [26]. Hoang and Hoang [73], in their study about online learning readiness in Vietnam, suggested that "students' perceived facilitating conditions and their online learning experiences were the significant predictors of online learning readiness. The study highlights the need for improving facilitating conditions to support students' online learning readiness".

In the Philippine setting, public university students' preparedness level was poor, indicating that students are not fully equipped or ready for online learning [26]. Moreover, Palaoag *et al.* [65] studied the preparedness of universities in the Cordillera Region in the Philippines for the new normal education. They found that 89.3% of the participating higher education institutions answered that they have been using flexible learning system (FLS) and 57.1% mentioned that FLS is part of their institutional policies. Hence, university preparedness is a huge factor to achieve quality education in the transition from traditional to new normal classroom. Nganga *et al.* [74] mentioned that different institutions have different levels of online learning preparedness because not all students and lecturers were trained for the modality, and some have limited resources.

In terms of satisfaction to flexible learning, online learning, and other distance learning modalities, studies present varying results from the perspective of the students. Many literatures present results that student satisfaction is a crucial element to ascertain the success of online learning courses [47, 75]. Turan *et al.* [76] studied satisfaction, flexibility, and self-regulation of university students in a distance learning setup. It was found that "self-regulated effort and flexibility variables were significant factors affecting students' satisfaction with distance education."

In an Asian country, Amir *et al*. [10] found that "more students felt lower learning satisfaction and experienced more difficult communication either with instructors or with peers in doing distance learning. Internal factors like challenges of students' readiness to distance learning, time management and difficulty to stay focused for long online learning duration were reported". Simsek *et. al.* [77] also identified that engineering students were more satisfied with distance learning compared to medical and dental students [78, 79].

Furthermore, She *et al.* [80] reported that a significant positive relationship was determined between Chinese university students' interaction and online learning satisfaction, interaction and academic self-efficacy, academic self-efficacy and student engagement, and the student engagement and online learning satisfaction". Meanwhile, Saudi Arabian university medical students were characterized with moderate satisfaction [81]. Also, Hettiarachchi *et al.* [82] studied Sri Lankan universities amidst the crisis regarding the determinants of satisfaction. They have shown that perceived learner motivation, perceived challenges of e-learning, and interaction significantly affected students' satisfaction with their new online learning experience. Out of the three variables, learner motivation exerted the strongest effect on students' satisfaction, implying the crucial role of self-regulated learning—characterized by motivation—in online learning environments.

III. Methodology

A. Research Design

Quantitative descriptive-correlational research design was utilized in this study. This design is utilized in studies that focus on providing static pictures of situations and establishing relationships between different variables [83]. This quantitative research method aims to describe two or more variables and relationships that exist between or among them. The study design may also enable the researcher to determine changes in the participants' behaviors or attitudes over time and determine how these changes affect the outcomes or possible trends that could emerge in the future [84].

This study sought to describe the students' perspective on the flexible learning modality of the College of Teacher Education (CTE) in terms of their level of readiness, level of satisfaction, and determined the relationships among the variables included in the study. The quantitative descriptive-correlational research design suited the objectives of the study and was therefore utilized. The readiness level of

the undergraduate university teacher education students was described in terms of technological, economic, and personal indicators. In addition, the satisfaction level was also described in terms of teaching and learning process, course materials, and course content. The data gathered conformed to the nature of the design because the purposes were to describe the variables mentioned and determine the relationships among them.

B. Participants of the Study

The study was conducted during first and second semester of academic year 2021–2022, in a public state university in Western Visayas, Philippines. A total of 372 undergraduate teacher education students participated in the study. The participants' comprised of 257 (69%) Bachelor of Secondary Education (BSED) students and 115 (31%) Bachelor of Elementary Education (BEED) students (Table I). In terms of year level, the participants were distributed as follows: 41% — first year students, 21% — second year students, 18% — third year students, and 20% — fourth year students (Table I). The participants comprised the 38.79% (i.e., 372) of the total population (i.e., 959) of the undergraduate students in the College of Teacher Education during the said academic year. Using the Slovin's formula, at 5% margin of error, the sample size may sufficiently represent the perspectives of the students. The participants were asked to answer the survey questionnaire through Google Forms. The data conforms to the minimum number of respondents needed to adequately describe the variables enumerated above. Hence, convenience and voluntary response sampling were employed in the study.

TABLE I: DISTRIBUTION OF THE PARTICIPANTS AS TO COURSE PROGRAM AND CURRICULAR YEAR

As to Program	N	%
Bachelor of Secondary Education (BSED)	257	69
Bachelor of Elementary Education (BEED)	115	31
Total	**372**	**100**
As to Curricular Year		
First year	153	41
Second year	78	21
Third year	67	18
Fourth year	74	20
Total	**372**	**100**

Ethical considerations were emphasized and ensured during the conduct of the study. The following ethical principles were observed by the researchers: (1) secure consent from the authorities and respondents of the study; (2) informed the respondents that no harm would come to them in relation to the study; (3) they may choose to withdraw their participation in case the respondents would choose to not answer the questions or if he/she felt discomfort; (4) students' anonymity were reserved and their data was treated with utmost confidentiality.

In addition, since the study was conducted amidst the pandemic and the new normal education, the researchers ensured strict observance of health and safety protocols.

C. Instrumentation, Data Collection, and Analysis

A researcher-made survey questionnaire was utilized. The questionnaire was converted into a digital version through Google Forms. This is to maximise the accessibility of the survey to the participants considering the limited interaction during the implementation of the flexible learning modality. The survey-questionnaires were validated in terms of content and congruency by three experts/professors specializing in the fields of research, education, and language. Two of them were doctorate degree holders and one is pursuing her doctorate degree in their respective fields. A Google Form link for the survey questionnaire was then sent to the participants before and after the semester, respectively.

The survey-questionnaire used to determine the students' level of readiness to the new normal education was found to be reliable with a Cronbach's alpha value of 0.86 after the pilot test. Prior to the conduct of the study, the pilot test of the instrument was administered to other students from different programs in the university excluding the teacher education students who were the main respondents of the study. Data collected was then analyzed using the SPSS version 20 and was found to be reliable. Moreover, a thorough content validity check was conducted by expert instrument validators in the university. The questionnaire is composed of three main indicators: economic, technological, and personal readiness. Each of these indicators has 10 sub-indicators respectively.

Another questionnaire was utilized to examine the students' level of satisfaction to the flexible learning modality. This was pilot tested to other university students together with the readiness questionnaire and produced a reliability coefficient of 0.91. The said questionnaire includes indicators such as teaching and learning process, course materials, and course content.

In interpreting the reliability coefficient of Likert-scale questionnaires, the following was used: "Excellent $\geq$ 0.9; 0.9 > Good $\geq$ 0.8; 0.8 > Acceptable $\geq$ 0.7; 0.7 > Questionable $\geq$ 0.6; 0.6 > Poor $\geq$ 0.5; and Unacceptable $\leq$ 0.5" [85]. Hence, the instruments used in this study were found to possess good and excellent reliability.

The survey questionnaires on students' level of readiness to new normal education and satisfaction to the flexible learning modality were 4-point Likert scale type of instruments. The participants were instructed to respond to the survey using the following scale: 1 — Not ready (satisfied); 2 — Slightly ready (satisfied); 3 — Ready (satisfied); 4 — Highly ready (satisfied). In terms of discussion and interpretation, the following scales in Table II were used:

TABLE II: INTERPRETATION OF THE LEVEL OF READINESS AND SATISFACTION

Scale	Level of Readiness	Level of Satisfaction
1.00—1.49	Not Ready	Not Satisfied
1.50—2.49	Slightly Ready	Slightly Satisfied
2.50—3.49	Ready	Satisfied
3.50—4.00	Highly Ready	Highly Satisfied

The study commenced from the first semester of academic year 2021–2022 towards the end of the second semester of the same academic year.

Before the start of the first semester of academic year 2021–2022, students were asked to answer the questionnaire on readiness to new normal education through a Google Form. This questionnaire included economic, technological, and personal indicators. After the analysis of the results, the

college adapted the Blended, Online, or Modular Learning Modality (BLOOM) to cater different kinds of students considering their unique and varying backgrounds. Since the level of readiness and preferred learning modality vary among the students, various flexible learning modalities were implemented by the different courses. Some courses were implemented fully online (i.e., asynchronous, and synchronous sessions). Other courses employed modular learning through printed modules and electronic modules (e-modules) distributed to the students. Lastly, there were courses that implemented both online and modular learning (blended) considering the differences in students' preference, readiness, and backgrounds in a specific course.

After the two-semester period of implementing the flexible learning modality in the college, the researchers assessed the satisfaction level of the students through a questionnaire in Google Form. The survey on the level of satisfaction was administered to determine whether students are satisfied to the various flexible learning modalities implemented by the college in terms of teaching and learning process, course materials, and the content of the course. To further ensure maximum participation of the students, various student organizations assisted in the distribution of the Google Forms link to the students across different year levels. After gathering the needed data, analysis followed.

In analyzing the data gathered, a combination of descriptive statistics and correlational analysis were employed. Moreover, the mean and standard deviation were used to describe the level of readiness of the students to new normal education and their level of satisfaction to flexible learning modality. Correlational analysis was also employed using the Spearman rho to correlate students' level of readiness to their level of satisfaction, and the relationships of the satisfaction indicators to the overall satisfaction of the students. Interpretation of correlation results was based on the works of Dancey and Reidy [86] (Table III). Descriptive and correlational analysis were employed in the study because the main goal of the study is to examine the readiness and satisfaction levels of the students to flexible learning modalities considering factors like economic, technological, and personal for readiness; and teaching-learning process, course materials, and content for satisfaction.

TABLE III: INTERPRETATION OF THE CORRELATION ANALYSIS USED BY DANCEY & REIDY [86]

Spearman rho value	Strength of Correlation
≥ 0.70	"Very strong relationship"
0.40—0.69	"Strong relationship"
0.30—0.39	"Moderate relationship"
0.20— 0.29	"Weak relationship"
0.01—0.19	"No or negligible relationship"

IV. RESULTS

A. Students' Level of Readiness in the New Normal Education

Table IV shows that the overall readiness level of the students to new normal education is "ready", with a mean of 2.95 and SD of 0.56. This shows that students are generally prepared to face the new normal way of learning including flexible and online learning modalities. Moreover, in terms of technological readiness and personal readiness, students are also "ready" with a mean of 3.33, SD = 0.23 and a mean of 3.18, SD = 0.26 respectively. On the other hand, in terms of economic readiness, students are "slightly ready" (M = 2.34, SD = 0.49). The low standard deviation in all the indicators also connote that the students' responses in terms of readiness are homogeneous. However, the low mean in economic readiness implies that students and their families were drastically affected by the sudden turn of situation incurring financial loss and instability. These indicators were aligned to what Widodo *et al.* [31] have suggested that resources, computational/technological skills, and self-regulation must be assessed to measure online learning preparedness of students in modalities included in the new normal.

TABLE IV: STUDENTS' OVERALL LEVEL OF READINESS IN THE NEW NORMAL EDUCATION

	Mean	SD	Description
Economic Readiness	2.34	0.49	Slightly ready
Technological Readiness	3.33	0.23	Ready
Personal Readiness	3.18	0.26	Ready
Overall Level of Readiness	**2.95**	**0.56**	**Ready**

The economic readiness of the students in the new normal education was highlighted in Table V. It can be observed that only three indicators were rated as "ready" by the students. These include: "I have mobile phone or computer that I can use in my classes" (M = 3.26, SD = 0.93), "I have television where I can view my lessons" (M = 2.50, SD = 1.15), and "I can sustain the financial needs for my online learning" (M = 2.69, SD = 0.73). On the contrary, the bottom two indicators which the students were not ready and slightly ready are: "I can print files that are given to me through my own printer" (M = 1.48, SD = 0.95) and "I have the capacity to buy the gadgets I need for flexible learn-ing" (M = 1.72, SD = 0.81), respectively. This connotes that the students are struggling in terms of the lack of necessary gadgets that they need for new normal education (e.g., printer, headphones, cameras, …) since most of them are just using mobile phones. In the remaining indicators, students were slightly ready which only show that they are not fully prepared financially to face the challenge of a new normal education due to limited resources in school and at home.

In terms of technological readiness, Table V presents the results. The students are "highly ready" when it comes to awareness on how to upload and download files in the web (M = 3.58, SD = 0.63), and on independently answering quizzes and assignments online (M = 3.56, SD = 0.63). It is also worthy to note that all the remaining indicators in technological readiness were rated as "ready" by the students. This only shows that these 21st century students possessed the technological competence necessary in the new normal and in a technology-suffused environment. This is not surprising because these university students are digital natives who possess the basic computational skills and awareness of how to navigate the internet or the web including social media applications. The technological skills and the access to

required equipment are necessary for online learning success [68].

TABLE V: STUDENTS' LEVEL OF READINESS IN THE NEW NORMAL EDUCATION CONSIDERING ALL THE INDICATORS

		Mean	SD	Description
Economic Readiness	I have the capacity to buy the gadgets I need for flexible learning.	1.72	0.81	Slightly ready
	I can consistently buy load to attend my online classes and access the internet.	2.27	0.81	Slightly ready
	I can pay the printing or photocopying of the materials given to us by our teachers.	2.27	0.95	Slightly ready
	I can sustain the financial needs for my online learning.	2.69	0.73	Ready
	I have mobile phone or computer that I can use in my classes.	3.26	0.93	Ready
	I have a fast and reliable Wi-Fi or internet connection.	2.36	0.73	Slightly ready
	I have television where I can view my lessons.	2.50	1.15	Ready
	I have videoconferencing materials like headphones, speakers, and microphones.	2.36	1.00	Slightly ready
	I can print files that are given to me through my own printer.	1.48	0.95	Not ready
	I have radio for learning whenever teachers are going to air our lessons.	2.48	1.07	Slightly ready
	Overall Level of Readiness	**2.34**	**0.49**	Slightly ready
Technological Readiness	I can adeptly use MS Excel or Spreadsheet in processing data.	2.87	0.77	Ready
	I can skillfully create presentations through MS PowerPoint.	3.11	0.75	Ready
	I can type, format, and edit text/manuscript through MS Word.	3.49	0.71	Ready
	I am knowledgeable in using email for communication with attachments.	3.43	0.67	Ready
	I know how to take and edit photos and videos.	3.14	0.77	Ready
	I am aware on how to upload and download files in the web.	3.58	0.63	Highly ready
	I can use well my cell phone or laptop in online learning.	3.33	0.72	Ready
	I have accessible social media platforms for online learning.	3.37	0.70	Ready
	I can answer independently the quizzes and assignments online.	3.56	0.63	Highly ready
	I know how to access the internet and look for the information I need.	3.48	0.64	Ready
	Overall Level of Readiness	**3.33**	**0.23**	**Ready**
Personal Readiness	I know how to independently answer tests/quizzes without web searching or cheating from others.	3.31	0.65	Ready
	I know how to direct myself to learn even without the teacher's assistance.	2.89	0.78	Ready
	I am capable of motivating and exciting myself to learn.	3.45	0.67	Ready
	I can easily comprehend instructions from my teacher.	3.02	0.72	Ready
	I am not easily distracted during my study hours.	2.62	0.94	Ready
	I always set timeline for my daily activities.	3.36	0.67	Ready
	I can set aside other tasks during class hours	3.34	0.76	Ready
	I can set my own targets and dues every day.	3.27	0.69	Ready
	I know how to stay focused and be punctual in submissions.	3.20	0.68	Ready
	I can figure things out on my own.	3.33	0.64	Ready
	Overall Level of Readiness	**3.18**	**0.26**	**Ready**

It can be viewed in Table V that the respondents were "ready" considering all the indicators of personal readiness. To add, the highest rating was on the statements: "I am capable of motivating and exciting myself to learn" and "I always set timeline for my daily activities", with means of 3.45 and 3.36 and SD of 0.67 respectively. The lowest means were were observed on the statements: "I am not easily distracted during my study hours" and "I know how to direct myself to learn even without the teacher's assistance", with means of 2.62 and 2.89 respectively. This implies that students have high self-regulation in the new normal particularly in the flexible learning modality. Self-directed learning is very evident among the respondents' level of personal readiness. However, distractions were inevitable in a flexible or online learning mode. Also, teacher's assistance is a critical factor to be considered when students are under these learning modalities in order to monitor their progress. This motivation and self-directed learning indicators were included in the key indicators for a successful online learning experience [68].

A. Students' Level of Satisfaction to the Flexible Learning Modality

Table VI presents the satisfaction level of the students to the flexible learning modality. The satisfaction level was divided into three parts: (1) teaching and learning process, (2) course materials, and (3) course content. The over-all satisfaction mean was 3.10 (SD = 0.44) and was rated as "Satisfied". It can be gleaned that the highest satisfaction level in teaching and learning process were attributed to the "Management of Learning" (M = 3.47, SD = 0.62) and "Teacher's Responsiveness" (M = 3.24, SD = 0.54), while the lowest was in "Learning Experience" (M = 2.91, SD = 0.72) and "Teaching and Learning Activities" (M = 2.94, SD = 0.73). Moreover, students were satisfied in all indicators under teaching and learning process. Thus, it is evident that the student-respondents were satisfied in the flexible learning modality implemented by the college during the pandemic. This was mainly based on how the faculty members manage the learning experiences of the students (i.e., by being responsive and aware of the needs of the students). However, the activities given by the teachers must be considered also by the students.

Also, students were satisfied in the completeness (M = 3.06, SD = 0.48) and accessibility (M = 3.05, SD = 0.49) of the materials, while slightly satisfied in the quality of materials (M = 2.42, SD = 0.62) provided. This implies that course materials and learning resources must be evaluated and should undergo quality assurance procedures before distribution. However, the rapid shift of learning modality in the new normal equates to the urgent demand of instructional materials. Hence, faculty members were rushed to develop and distribute materials without thorough evaluation.

In addition, students were satisfied in the content of the courses delivered in the new normal through the flexible learning modality with the highest satisfaction level from

general education courses (M = 3.39, SD = 0.59), followed by specialization courses (M = 3.38, SD = 0.61), and professional education courses (M = 3.28, SD = 0.68). Hence, even if students were slightly satisfied with the quality of materials which may be due to the format, presentation, and design, the content of the courses offered during this flexible learning modality was substantial for the students.

TABLE VI: LEVEL OF SATISFACTION OF THE STUDENTS TO THE FLEXIBLE LEARNING MODALITY IN THE NEW NORMAL

		N	Mean	SD	Interpretation
Teaching and Learning Process	Learning experience	372	2.91	0.72	Satisfied
	Class performance	372	3.00	0.71	Satisfied
	Teaching and learning activities	372	2.94	0.73	Satisfied
	Instructional support	372	3.06	0.52	Satisfied
	Teacher's responsiveness	372	3.24	0.54	Satisfied
	Management of learning	372	3.47	0.62	Satisfied
Course Materials	Quality of course materials	372	2.42	0.62	Slightly Satisfied
	Completeness of course materials	372	3.06	0.48	Satisfied
	Accessibility of course materials	372	3.05	0.49	Satisfied
Course Content	General education	372	3.39	0.59	Satisfied
	Specialization	372	3.38	0.61	Satisfied
	professional Education	372	3.28	0.68	Satisfied
	Overall Satisfaction	**372**	**3.10**	**0.44**	**Satisfied**

B. Relationship between the Students' Level of Readiness to New Normal Education and Level of Satisfaction in the Flexible Learning Modality

Table VII reveals that there is a positive, significant but weak correlation between the student's' level of readiness to new normal education and their level of satisfaction to the flexible learning modality of the college at 0.05 level of significance ($r = 0.284$; $p < 0.05$). This indicates that the readiness of the students in new normal education is still contributory to their satisfaction level. Hence, the preparedness of the students in a flexible learning environment must be considered by the institution including technological, economic, and personal readiness since these are critical factors to their satisfaction level.

TABLE VII: RELATIONSHIP OF STUDENTS' LEVEL OF READINESS TO THEIR LEVEL OF SATISFACTION TO THE FLEXIBLE LEARNING MODALITY IN THE NEW NORMAL

	p-value	r	Interpretation
Level of Readiness Overall Satisfaction	0.000	0.284*	Weak correlation, significant

***significant at 0.05 level of significance, p<0.05**

C. Relationship between Level of Satisfaction Indicators to the Overall Satisfaction of the Students in the Flexible Learning Modality

It can be observed in Table VIII that all indicators of students' level of satisfaction were significantly correlated to the overall satisfaction at 0.05 level of significance ($p<0.05$). Moreover, class performance ($r = 0.716$), teaching and learning activities ($r = 0.738$), management of learning ($r = 0.794$), course content indicators [general education ($r = 0.824$), specialization ($r = 0.771$), and professional education ($r = 0.840$)] are very strongly correlated to the overall students' satisfaction. Furthermore, learning experience ($r = 0.674$), instructional support ($r = 0.631$), teacher's responsiveness ($r = 0.513$), course materials indicators [quality ($r = 0.652$), accessibility ($r = 0.595$), and completeness ($r = 0.637$)] were strongly correlated to overall satisfaction.

The results show that course content, learning activities, and teachers' strategies in facilitating learning are the most influential factors contributing to the satisfaction of the students to the flexible learning modality of the college. However, factors like course materials and support to instruction should also be included because these are also instrumental towards the overall satisfaction of the students. Institutions of higher learning must consider these factors in crafting flexible learning systems for the students.

TABLE VIII: RELATIONSHIP OF STUDENTS' LEVEL OF SATISFACTION INDICATORS ON FLEXIBLE LEARNING TO THE OVERALL SATISFACTION

		p-value	r	Interpretation
Overall Satisfaction	Learning Experience	0.000	0.674*	"Strong correlation, significant"
	Class Performance	0.000	0.716*	"Very strong correlation, significant"
	Teaching and Learning Activities	0.000	0.738*	"Very strong correlation, significant"
	Instructional Support	0.000	0.631*	"Strong correlation, significant"
	Teacher's Responsiveness	0.000	0.513*	"Strong correlation, significant"
	Management of Learning	0.000	0.794*	"Very strong correlation, significant"
	Quality of Course Materials	0.000	0.652*	"Strong correlation, significant"
	Completeness of Course Materials	0.000	0.637*	"Strong correlation, significant"
	Accessibility of Course Materials	0.000	0.595*	"Strong correlation, significant"
	General Education	0.000	0.824*	"Very strong correlation, significant"
	Specialization	0.000	0.771*	"Very strong correlation, significant"
	Professional Education	0.000	0.840*	"Very strong correlation, significant"

***significant at 0.05 level of significance, p<0.05**

V. DISCUSSION

Results present that students were generally ready and satisfied with the learning modality utilized. More specifically, the students were 'ready' in terms of technological readiness and personal readiness. However, the students were only 'slightly ready' in terms of economic readiness. The

participants' satisfaction was also assessed after the try-out of the flexible learning modality. The results exposed that the overall satisfaction of the Filipino undergraduate university teacher education students was 'satisfied'. These students were particularly satisfied with the management of learning done during the flexible learning mode. This indicator yielded the highest satisfaction. This level of satisfaction was attributed highly to the course content, learning materials, learning activities, and teachers' strategies. The indicator with the lowest satisfaction level was the quality of course materials, students' learning experience, and activities. In addition, students' level of readiness had a significant but weak correlation to their level of satisfaction with the flexible learning modality. Nevertheless, the relationship had a positive correlation indicating that learner preparedness still influences their satisfaction. Furthermore, there was a significant relationship among the overall satisfaction of the students and the indicators consisting of teaching and learning process, course materials (quality, accessibility, and completeness), and course content.

In view of other studies conducted on the same topic, some studies contradict to, and some confirm the findings of this study. Chung *et al.* [24] similarly found the same readiness level among higher education institution students in Malaysia. In addition, Kamaruzaman *et al.* [68] reports that university education students in Malaysia were prepared as to technological, motivational, and equipment. Surprisingly, in Nigeria, university students are highly prepared for online learning as reported by Olayemi and Adamu *et al.* [72]. Contrary to the findings, Reimers and Schleicher [28] utilized an international assessment which found that majority of the youths from diverse institutions are not online ready. The same situation was found by different studies on learning readiness in the new normal in the Philippine setting [32]. Guansi *et al.* [25] reveals that college students in the northern part of the country were least ready to face the new normal learning setup. This seemingly unfortunate reality agreed with the study of Soriano *et al.* [26] in a certain province in the Philippines comprising university students who were not fully equipped for online learning resulting to poor readiness. In the survey conducted by Palaoag *et al.* [65] among Higher Education Institutions (HEIs) in a region in the country, most of the participating HEIs shared that flexible learning was already integrated in their system, and more than half of the respondents mentioned that it is part of their institutional protocols. However, faculty and students revealed that there are problems on flexible learning modalities. This is because different institutions also have different levels of readiness [74]. Hence, these readiness levels should be considered in preparing for and implementing a new learning modality because these are closely linked to student performance [29, 50–52].

Students claim that they are well-versed in using the internet (i.e., download pictures, files, music), navigating online quizzes and surveys, and in using basic computing tools. Additionally, students believed that they are generally 'ready' when it comes to meeting deadlines, self-monitoring of progress, self-directed learning, focusing on learning tasks, self-motivation among many others. This result is consistent to the findings of Kamaruzaman *et al.* [68] and Olayemi *et al.* [72].

As cited in the early part of this paper, one the most common problems that was caused by the pandemic was economic turndown [87, 88], thus affecting the financial and economic status of the students and their families. This is also in consonance to what Cortez [43] reported about economic and technological readiness. He emphasized that these factors are crucial because most of the areas in the Philippines have poor connection or network coverage and most of the families are earning meagre wages. Alipio [89] revealed that students coming from rural areas and low-income families have low preparedness in new normal learning. Students note that some of them do not have access to good internet connection, lack in needed devices and gadgets, and lack of financial capacity to buy internet data and mobile load. This is expected because the global challenges and issues that were common during the new normal education include power disruptions, internet connection, financial constraints, interaction, issues, lack of resources, material availability, economic downturn, and unemployment [8, 9, 25, 87, 90].

As to satisfaction, university students in other programs present varying findings as to their satisfaction to the new normal way of learning. Simsek *et al.* [77] also identified varying satisfaction levels among engineering, medical and dental students [78, 79]. On the other hand, Rajeh *et al.* [81] presented a fair satisfaction level among medical students in Saudi Arabia. This attested what other previous studies have found like that of She *et al.* [80] which exposed that online learning satisfaction of Chinese university students is influenced by both the engagement of the students in learning and interaction through activities. Since learning satisfaction is multidimensional, some of the indicators enumerated were also considered in various literature and studies [47, 55–57].

Furthermore, results on satisfaction reflect Bismala & Manurung's findings [63] indicating that instructional materials and facilities are the common factors which need improvement for online learning. Thus, educational institutions need to consider online learning management competencies (e.g., making good material and creating learning media more interactive) for their faculty members [5, 91–93]. Similar problems were found by Turan *et al.* [76] such as limited instructional resources, access to courses, adapting to the courses, and the unnecessary student load given by the instructors.

In terms of the association of readiness level to the satisfaction level of students, Hettiarachchi *et al.* [82] reported similar findings: that is, motivation, challenges, and interaction influence online learning satisfaction, and that motivation was the most influential factor under self-regulated learning. These indicators and constructs were included in the personal readiness questionnaire in this study which correlates with the student's satisfaction. In addition, the facilitating condition for learning must be considered as well to maximize students' learning experience in a flexible learning environment [73]. This is in accordance with what Abuhassna *et al.* [34] has advanced that experience and student engagement influence their satisfaction in an online learning set-up. Moreover, academic issues have adversely affected learning satisfaction of the students [36–39]. Problems on accessibility like poor network connection to

access educational activities and learning materials were also factors affecting students' satisfaction on distance learning and flexible learning modalities [40–42]. Although the results of this study vary from the findings of other research studies conducted on the same topic, one cannot deny the fact that learning satisfaction is indispensable in determining quality flexible learning modality [47, 61, 75].

VI. Conclusion and Recommendations

The readiness levels of university education students indeed vary considering technological, economic, and personal factors. The various learning agencies and propensities of the students to learn in the new normal through flexible learning modalities were contributory to their readiness emphasizing the fact that a public university is a melting pot of students from the various sectors of the society. Hence, educators, concerned agencies, and entities in the country have struggled to cope with the changes and to overcome the obstacles that resulted from the pandemic. Akin to this struggle, university teacher education students were also unprepared for this sudden shift of learning setup.

Moreover, despite the satisfied perception of these public university students towards flexible learning, the varying levels of satisfaction as evinced by the results implies that not all students could effectively learn and thrive in flexible learning modalities. Considering the challenging situations of public university students, individual differences and preferences may be emphasized by the institution and the teachers in carrying out the teaching and learning process amid the crisis or even after the pandemic. Satisfaction is relative: students may be satisfied to some indicators and not to the other indicators. Therefore, students' readiness and other factors can influence satisfaction levels as supported by the positive association found in this study. Thus, to ensure quality and responsive education in the new normal, these factors should be investigated and considered in recalibrating learning plans for the post-pandemic world.

Economic, technological, and personal readiness of the students may be considered by higher education institutions before adopting new learning modalities in the future. The findings of this study indicates that these factors may be considered contributory to the students' satisfaction with the educational processes of a certain institution. The teaching and learning processes, management of learning, course materials and other resources, and course content are all instrumental in the satisfaction level of the students in flexible learning modalities.

Results may also be used to recalibrate, modify, or craft curricular innovations, instructional initiatives, and sustainable learning continuity plans by the university and the college. This would enable optimization of learning considering the diversity of learners catered by the school and would equip its faculty with the necessary competence needed in the post pandemic education arena.

Nevertheless, this study provides research-based information that policy makers and administrators may use to review and enhance the new normal education system and procedures currently being used by colleges and universities. It is suggested that future researchers conduct research studies that are more encompassing (i.e., regional, and national level). This may provide national level agencies and organizations empirical information that could help them in decision-making relevant to the current educational system. It may also be useful to conduct research specific to factors such as psychological and mental stresses of learners during the pandemic and economic or financial factors focusing on the unique backgrounds of the learners. This may help stakeholders get a deeper understanding of the learners and the barriers they encounter, and even relate these factors to other aspects of the society.

Conflict of Interest

The author declares no conflict of interest.

Author Contributions

The first author wrote the paper, helped in the data analysis, and did all the necessary revisions to comply with the standards of the journal. On the other hand, the second author facilitated the gathering of data together with the former, helped in the data analysis, and reviewed/edited the final version of the paper. All authors had approved the final version.

Acknowledgment

The authors would like to express their heartfelt gratitude to the Aklan State University Research and Development Services Unit, the College of Teacher Education, and the administration for their unyielding support to the research endeavors of the researchers.

References

[1] W. Ali, "Online and remote learning in higher education institutes: A necessity in light of COVID-19 pandemic," *Higher Education Studies*, vol. 10, no. 3, 2020, https://doi.org/10.5539/hes.v10n3p16

[2] P. Sahu, "Closure of universities due to Coronavirus Disease 2019 (COVID-19): Impact on education and mental health of students and academic staff," *Cureus*, vol. 12, no. 4, e7541, 2020, https://doi.org/10.7759/cureus.7541

[3] T. Karakose, "The impact of the COVID-19 epidemic on higher education: Opportunities and implications for policy and practice," *Educational Process: International Journal*, vol. 10, no. 1, pp. 7-12, 2021, http://dx.doi.org/10.22521/edupij.2021.101.1

[4] J. Crawford, K. Henderson, J. Rudolph, B. Malkawi, M. Glowatz, R. Burton, P. Magni, and S. Lam, "COVID-19: 20 countries' higher education intra-period digital pedagogy responses," *Journal of Applied Learning & Teaching*, vol. 3, no. 1, pp. 1-20, 2020, doi: 10.37074/jalt.2020.3.1.7.

[5] K. Syauqi, S. Munadi, and M. Triyono, "Students' perceptions toward vocational education on online learning during the COVID-19 pandemic," *International Journal of Evaluation and Research in Education (IJERE)*, vol. 9, no. 4, pp. 881-886, 2020, DOI: 10.11591/ijere.v9i4.20766

[6] Q. H. De Jesus, F. M. Rico, and E. N. Farin, "Challenges in the new learning modalities of elementary school teachers in Zambales, Philippines," *EAS Journal of Humanities and Cultural Studies*, 2022, DOI: 10.36349/easjhcs.2022.v04i03.005

[7] A. J. D. Agayon, A. K. R. Agayon, and J. T. Pentang, "Teachers in the new normal: Challenges and coping mechanisms in secondary schools," *International Journal of Humanities and Education Development (IJHED)*, vol. 4, no. 1, pp. 67–75, 2022, https://doi.org/10.22161/jhed.4.1.8

[8] R. Ancheta and H. Ancheta, "The new normal in education: A challenge to the private basic education institutions in the Philippines,"

International Journal of Educational Management and Development Studies, vol. 1, no. 1, 2020.

[9] G. Özüdoğru, "Problems faced in distance education during Covid-19 Pandemic," *Participatory Educational Research*, vol. 8, no. 4, pp. 321–333, 2021, http://dx.doi.org/10.17275/per.21.92.8.4

[10] L. Amir, I. Tanti, D. Maharani, Y. Wimardhani, V. Julia, B. Sulijaya, and R. Puspitawati, "Student perspective of classroom and distance learning during COVID-19 pandemic in the undergraduate dental study program Universitas Indonesia," *BMC Medical Education*, 2020, https://doi.org/10.1186/s12909-020-02312-0

[11] L. Mallillin, "Behavior and attitude of students in the new normal perspective of learning," *East African Scholars Journal of Psychology and Behavioral Sciences*, vol. 3, no. 2, 2021, DOI: 10.36349/easjpbs.2021.v03i02.001

[12] J. Nabayra, "Least mastered topics in mathematics and freshmen students' perception of mathematics learning in the new normal from a state university in the Philippines," *Journal of Positive School Psychology*, vol. 6, no. 6, pp. 280–289, 2022.

[13] J. Reich *et al.*, *Remote Learning Guidance from State Education Agencies during the COVID-19 Pandemic: A First Look*, 2020.

[14] M. Langford and C. Damsa, "Online Teaching in the Time of COVID-19: Academic' Experience in Norway," Centre for Experiential Legal Learning (CELL), University of Oslo. 2020.

[15] P. Ortiz, "Teaching in the time of COVID-19," *Biochemistry and Molecular Biology Education*, vol. 48, no. 3, 2020, doi: 10.1002/bmb.21348.

[16] J. Morales, "Oportunidad o crisis educativa: Reflexiones desde la Psicología para Enfrentar los Procesos de Enseñanza-Aprendizaje en Tiempos de Covid-19," *Revista Internacional de Educación para la Justicia Social*, vol. 9, no. 3, 2020, https://revistas.uam.es/riejs/article/view/12228.

[17] J. Nabayra, "Mathematics learning in the new normal through teacher-created videos: The freshmen university students' experience," *International Journal of Arts and Humanities Studies (IJAHS)*, vol. 2, no. 1, pp. 22–27, 2022, Doi: 10.32996/bjahs.2022.2.1.4

[18] J. Nabayra, "YouTube-based teacher-created videos for online mathematics learning during the pandemic and its effect to students' mathematics performance," *Webology*, vol. 19, no. 2, 2022, https://www.webology.org/abstract.php?id=1320

[19] R. Firmansyah *et al.*, "Educational Transformation: An evaluation of online learning due to COVID-19" *Int. J. Emerg. Technol. Learn*., vol. 16, no. 7, pp. 61–76, 2020, https://doi.org/10.3991/ijet.v16i07.21201

[20] N. Almusharraf and S. Khahro, "Students' satisfaction with online learning experiences during the COVID-19 pandemic," *Int. J. Emerg. Technol. Learn.*, vol. 15, no. 21, pp. 246–267, 2020, https://doi.org/10.3991/ijet.v15i21.15647.

[21] Sabaruddin, Marzuki, and Khairunnisak, "Pandemic Covid-19: The opportunities and challenges to using ICT in mathematics learning," *IJEBD-Int. J. Entrep. Bus. Dev*, vol. 3, no. 4, 2020, https://jurnal.narotama.ac.id/index.php/ijebd/article/view/1201

[22] A. P. Aguilera-Hermida, "College students' use and acceptance of emergency online learning due to COVID-19," *International Journal of Educational Research Open*, vol. 1, 100011, 2020.

[23] J. Ferrer, A. Ringer, K. Saville, M. A. Parris, and K. Kashi, "Students' motivation and engagement in higher education: The importance of attitude to online learning," *Higher Education*, pp. 1–22, 2020, https://doi.org/10.1007/s10734-020-00657-5

[24] E. Chung, G. Subramaniam, and L. C. Dass, "Online learning readiness among university students in Malaysia amidst COVID-19," *Asian Journal of University Education*, vol. 16, no. 2, pp. 46–58, 2020.

[25] G. Guansi, B. Pal-ec, and G. Orasing, "Readiness of students in the new normal learning: An assessment in Baguio City and Benguet Province," *American Journal of Engineering Research (AJER)*, vol. 9, no. 12, pp. 107–117, 2020.

[26] R. Soriano, P. Cagurangan, and C. Escario, "Exploring students' readiness in online learning in the new normal," *Asia Proceedings of Social Sciences*, vol. 9, no. 1, pp. 217–218, 2022.

[27] A. Widodo, N. Nursaptini, S. Novitasari, D. Sutisna, and U. Umar, "From face-to-face learning to web base learning: How are student readiness?" *Premiere Educandum: Jurnal Pendidikan Dasar Dan Pembelajaran*, vol. 10, no. 2, pp. 149–160, 2020.

[28] F. M. Reimers and A. Schleicher, "A framework to guide an education response to the COVID-19 Pandemic of 2020," OECD, 2020, https://oecd.dam-broadcast.com/pm_7379_126_126988-t63lxosohs.pdf

[29] Y. Wang, M. Xia, W. Guo, F. Xu, and Y. Zhao, "Academic performance under COVID-19: The role of online learning readiness and emotional competence," *Current Psychology*, 2022, https://doi.org/10.1007/s12144-022-02699-7

[30] Z. Kaymak and M. Horzum, "Relationship between online learning readiness and structure and interaction of online learning students," *Educational Sciences: Theory & Practice*, vol. 13, no. 3, 2013, DOI: 10.12738/estp.2013.3.1580

[31] S. Widodo, Y. Wibowo, and W. Wagiran, "Online learning readiness during the Covid-19 pandemic," *Journal of Physics: Conference Series*, vol. 1700, 012033, 2020, doi:10.1088/1742-6596/1700/1/012033

[32] C. M. Toquero, "Challenges and opportunities for higher education amid the COVID-19 pandemic: The Philippine context," *Pedagogical Research*, vol. 5, no. 4, em0063, 2020, https://doi.org/10.29333/pr/7947

[33] W. Elshami, M. Taha, M. Abuzaid, C. Saravanan, S. Al Kawas, and M. Abdalla, "Satisfaction with online learning in the new normal: Perspective of students and faculty at medical and health sciences colleges," *Medical Education Online*, vol. 26, no. 1, 2021, DOI: 10.1080/10872981.2021.1920090

[34] H. Abuhassna, W. M. Al-Rahmi, N. Yahya *et al.*, "Development of a new model on utilizing online learning platforms to improve students' academic achievements and satisfaction," *Int J Educ Technol High Educ*, vol. 17, no. 38, 2020, https://doi.org/10.1186/s41239-020-00216-z

[35] D. U. N. Ranadewa, T. Y. Gregory, D. N. Boralugoda, J. A. H. T. Silva, and N. A. Jayasuriya, "Learners' satisfaction and commitment towards online learning during COVID-19: A concept paper," *Vision*, 2021.

[36] D. Nambiar, "The impact of online learning during COVID-19: Students' and teachers' perspective," *The International Journal of Indian Psychology*, vol. 8, no. 2, p. 11, 2020.

[37] A. Rameez, M. A. M. Fowsar, and N. Lumna, "Impact of COVID-19 on higher education sectors in Sri Lanka: A study based on South Eastern University of Sri Lanka," *Journal of Educational and Social Research*, vol. 10, no. 6, pp. 341–349, 2020.

[38] E. Aboagye, J. A. Yawson, and K. N. Appiah, "COVID-19 and e-learning: The challenges of students in tertiary institutions," Universal Wiser Publisher, 2020.

[39] M. Adnan and K. Anwar, "Online learning amid the COVID-19 pandemic: Students' perspectives," *Journal of Pedagogical Sociology and Psychology*, vol. 2, no. 1, p. 7, 2020.

[40] P. Chakraborty, P. Mittal, M. S. Gupta, S. Yadav, and A. Arora, "Opinion of students on online education during the COVID-19 pandemic," *Human Behavior and Emerging Technologies*, vol. 3, no. 3, pp. 357–365, 2021.

[41] K. Sharma, G. Deo, S. Timalsina, A. Joshi, N. Shrestha, and N. Hc, "Online learning in the face of COVID-19 pandemic: Assessment of students' satisfaction at Chitwan Medical College of Nepal," *Kathmandu University Medical Journal*, vol. 70, no. 70, pp. 40–47, 2020.

[42] A. C. M. Nafrees, A. Roshan, A. N. Baanu, M. N. F. Nihma, and F. Shibly, "Awareness of online learning of undergraduates during COVID 19 with special reference to South Eastern University of Sri Lanka," *Journal of Physics: Conference Series*, vol. 1712, 012010, 2020.

[43] C. P. Cortez, "Blended, distance, electronic and virtual-learning for the new normal of mathematics education: A Senior high school student's perception," *European Journal of Interactive Multimedia and Education*, vol. 1, no. 1, e02001, 2020, https://doi.org/10.30935/ejimed/8276

[44] C. Pappas, "Instructional design models and theories: Connectionism theory," *eLearning Industry*, 2013, https://elearningindustry.com/connectionism

[45] D. R. L. Hukle, "An evaluation of readiness factors for online education," Doctoral dissertation, Mississippi State University, Mississippi, 2009.

[46] M. B. Horzum and Ö. Çakır, "Structural equation modelling in readiness, willingness and anxiety of secondary school students about the distance learning," presented at the *Cyprus International Conference on Educational Research Cy-Icer 2012*, Middle East Technical University Northern Cyprus Campus, Northern Cyprus, 2012.

[47] H. C. Wei and C. Chou, "Online learning performance and satisfaction: Do perceptions and readiness matter?" *Distance Education*, vol. 41, no. 1, pp. 48–69, 2020, https://doi.org/10.1080/01587919.2020.1724768

[48] B. J. Dray, P. R. Lowenthal, M. J. Miszkiewicz, M. A. Ruiz-Primo, and K. Marczynski, "Developing an instrument to assess student readiness for online learning: A validation study," *Distance Education*, vol. 32, no. 1, pp. 29-47, 2011.

[49] S. Borotis and A. Poulymenakou, "E-Learning readiness components: Key issues to consider before adopting e-learning interventions," in *Proc. 2004-World Conference on E-learning in Corporate, Government, Healthcare, and Higher Education, Washington, DC, USA*, Association for the Advancement of Computing in Education (AACE), 2004, pp. 1622–1629.

[50] Y. Lee and J. Choi, "A structural equation model of predictors of online learning retention," *The Internet and Higher Education*, vol. 16, pp. 36–42, 2013.

[51] T. Yu, "Examining construct validity of the student online learning readiness (SOLR) instrument using confirmatory factor analysis," *Online Learning*, vol. 22, no. 4, pp. 277–288, 2018.

[52] T. Joosten and R. Cusatis, "Online learning readiness," *American Journal of Distance Education*, vol. 34, no. 3, pp. 180–193, 2020.

[53] I. S. Weerasinghe and R. L. Fernando, "Students' satisfaction in higher education," *American Journal of Educational Research*, vol. 5, no. 5, pp. 533–539, 2017, https://ssrn.com/abstract=2976013

[54] V. Thurmond, K. Wambach, H. Connors, and B. Frey, "Evaluation of student satisfaction: Determining the impact of a web-based environment by controlling for student characteristics," *American Journal of Distance Education*, vol. 16, no. 3, pp. 169-190, 2002, DOI: 10.1207/S15389286AJDE1603_4

[55] G. Öztürk, A. Karamete, and G. Çetin, "The relationship between pre-service teachers' cognitive flexibility levels and techno-pedagogical education competencies," *International Journal of Contemporary Educational Research*, vol. 7, pp. 40–53, 2020, https://eric.ed.gov/?id=EJ1262348

[56] M. Kurucay and F. A. Inan, "Examining the effects of learner-learner interactions on satisfaction and learning in an online undergraduate course," *Computers and Education*, vol. 115, pp. 20–37, 2017, https://doi.org/10.1016/j.compedu.2017.06.010

[57] D. U. Bolliger, F. A. Inan, and O. Wasilik, "Development and validation of the online instructor satisfaction measure (OISM)," *Journal of Educational Technology & Society*, vol. 17, no. 2, pp. 183–195, 2014, http://www.jstor.org/stable/jeductechsoci.17.2.183

[58] K. A. Meyer, "Student engagement in online learning: What works and why," *ASHE High Educ Rep.*, vol. 40, no. 6, pp. 1–114, 2014, DOI:10.1002/aehe.20018

[59] R. A. Croxton, "The role of interactivity in student satisfaction and persistence in online learning," *Journal of Online Learning and Teaching*, vol. 10, no. 2, p. 314, 2014, https://jolt.merlot.org/vol10no2/croxton_0614.pdf

[60] C. Dziuban, P. Moskal, J. Thompson, L. Kramer, G. DeCantis, and A. Hermsdorfer, "Student satisfaction with online learning: Is it a Psychological contract," *Journal of Asynchronous Learning Network*, vol. 19, no. 2, 2015, DOI:10.24059/olj.v19i2.496

[61] S. H. Cheon, J. Reeve, and M. Vansteenkiste, "When teachers learn how to provide classroom structure in an autonomy-supportive way: Benefits to teachers and their students," *Teaching and Teacher Education*, vol. 90, 103004, 2020, https://doi.org/10.1016/j.tate.2019.103004

[62] S. P. Adhikari *et al*., "Epidemiology, causes, clinical manifestation and diagnosis, prevention and control of coronavirus disease (COVID-19) during the early outbreak period: A scoping review," *Infectious Diseases of Poverty*, vol. 9, no. 1, pp. 1–12, 2020.

[63] L. Bismala and Y. Manurung, "Student satisfaction in e-learning along the COVID-19 pandemic with importance performance analysis," *International Journal of Evaluation and Research in Education (IJERE)*, vol. 10, no. 3, pp. 753-759, 2021, DOI: 10.11591/ijere.v10i3.21467

[64] K. Fuchs, "The difference between emergency remote teaching and e-learning," *Front. Educ*. 7:921332, 2022, doi: 10.3389/feduc.2022.921332

[65] T. Palaoag, J. Catanes, R. Austria, and J. Ingosan, "Prepping the new normal: the readiness of higher education institution in cordillera on a flexible learning," in *Proc. 2020 the 4th International Conference on Education and Multimedia Technology*, 2020, pp. 178–182, https://doi.org/10.1145/3416797.3416829

[66] P. Mbaka and E. Mwenda, "Flexible and blended learning during COVID-19 Pandemic: New norm in teaching and learning," *Journal of Education and Practice*, vol. 12, no. 15, 2021, https://iiste.org/Journals/index.php/JEP/article/view/56347

[67] H. d'Orville, "COVID-19 causes unprecedented educational disruption: Is there a road towards a new normal?" *Prospects*, vol. 49, pp. 11–15, 2020, https://doi.org/10.1007/s11125-020-09475-0

[68] F. M. Kamaruzaman, N. A. Sulaiman, and N. A. N. Shaid, "A study on perception of students' readiness towards online learning during Covid-19 pandemic," *International Journal of Academic Research in Business and Social Sciences*, vol. 11, no. 7, pp. 1536–1548, 2021, http://dx.doi.org/10.6007/IJARBSS/v11-i7/10488

[69] S. Dhawan, "Online learning: A Panacea in the time of COVID-19 crisis," *Journal of Educational Technology Systems*, vol. 49, no. 1, pp. 5–22, 2020.

[70] J. Shore, *Problems in Online Class*, 2020.

[71] J. Friedman. (2020). Tackle challenges of online classes due to COVID-19. [Online]. Available: https://www.usnews.com/education/best-colleges/articles/how-to-overcome-challenges-of-online-classes-due-to-coronavirus

[72] M. S. Olayemi, H. Adamu, and K. J. Olayemi, "Perception and readiness of students' towards online learning in Nigeria during COVID-19 pandemic," *Library Philosophy and Practice*, 5051, 2021, https://digitalcommons.unl.edu/libphilprac/5051

[73] D. T. N. Hoang and T. Hoang, "Ready or not? An exploration of university students' online learning readiness and intention to use during COVID-19 pandemic," *E-Learning and Digital Media*, 20427530221117330, 2022, https://doi.org/10.1177/20427530221117330

[74] G. Nganga, M. Waruru, and G. Nakweya, "Universities face multiple challenges in wake of COVID-19 closures," *University World News*, 2020.

[75] K. M. Hamdan, A. M. Al-Bashaireh, Z. Zahran, A. Al-Daghestani, S. Al-Habashneh, and A. M. Shaheen, "University students' interaction, Internet self-efficacy, self-regulation and satisfaction with online education during pandemic crises of COVID-19 (SARS-CoV-2)," *International Journal of Educational Management*, vol. 35, no. 3, pp. 713–725, 2021, https://doi.org/10.1108/IJEM-11-2020-0513

[76] Z. Turan, S. Kucuk, and S. C. Karabey, "The university students' self-regulated effort, flexibility and satisfaction in distance education," *Int J Educ Technol High Educ*, vol. 19, no. 35, 2022, https://doi.org/10.1186/s41239-022-00342-w

[77] I. Simsek, S. Kucuk, S. K. Biber, and T. Can, "Online learning satisfaction in higher education amidst the Covid-19 pandemic," *Asian Journal of Distance Education*, vol. 16, no. 1, pp. 247–261, 2021, https://doi.org/10.5281/zenodo.5047848

[78] B. Atilgan, O. E. Tari, B. N. Ozdemir, I. Aktar, M. Gunes, E. B. Baran, B. Genc, M. K. Koksal, and I. Sayek, "Evaluation of the emergency distance teaching from the perspective of medical students," *Journal of Continuing Medical Education*, vol. 29, no. 6, pp. 396–406, 2021, https://doi.org/10.17942/sted.837551

[79] A. Aristovnik, D. Keržič, D. Ravšelj, N. Tomaževič, and L. Umek, "Impacts of the COVID-19 pandemic on life of higher education students: A global perspective," *Sustainability*, vol. 12, no. 20, pp. 1–34, 2020, https://doi.org/10.3390/su12208438

[80] L. She, L. Ma, A. Jan, H. Sharif Nia, and P. Rahmatpour, "Online learning satisfaction during COVID-19 pandemic among Chinese university students: The serial mediation model," *Front. Psychol*, vol. 12, 743936, 2021. doi: 10.3389/fpsyg.2021.743936

[81] M. T. Rajeh, F. H. Abduljabbar, S. M. Alqahtani, F. J. Waly, I. Alnaami, A. Aljurayyan, and N. Alzaman, "Students' satisfaction and continued intention toward e-learning: a theory-based study," *Medical education online*, vol. 26, no. 1, 1961348, 2021, https://doi.org/10.1080/10872981.2021.1961348

[82] S. Hettiarachchi, B. Damayanthi, S. Heenkenda, D. Dissanayake, M. Ranagalage, and L. Ananda, "Student Satisfaction with Online Learning during the COVID-19 Pandemic: A Study at State Universities in Sri Lanka," *Sustainability*, vol. 13, no. 21, 11749, 2021, https://doi.org/10.3390/su132111749

[83] D. McBurney and T. White, *Research Methods*, New York, NY: Cengage Learning, 2009.

[84] E. R. Monsen and L. V. Horn, *Research: Successful Approaches*, New York: American Dietetic Association, 2007.

[85] D. George and P. Mallery, *SPSS for Windows Step by Step: A Simple Guide and Reference*, 11.0 update (4th ed.). Boston: Allyn & Bacon, 2003.

[86] C. Dancey and J. Reidy, *Statistics without Maths for Psychology: Using SPSS for Windows*, Prentice Hall, London, 2004.

[87] E. Rotas and M. Cahapay, "Difficulties in remote learning: voices of Philippine university students in the wake of Covid-19 crisis," *Asian Journal of Distance Education*, vol. 12, no. 2, 2020, https://files.eric.ed.gov/fulltext/EJ1285295.pdf

[88] J. Z. Tria, "The COVID-19 pandemic through the lens of education in the Philippines: The new normal," *International Journal of Pedagogical Development and Lifelong Learning*, vol. 1, no. 1, ep2001, 2020, https://doi.org/10.30935/ijpdll/8311

[89] M. Alipio, "Education during COVID-19 era: Are learners in a less-economically developed country ready for e-learning?"

ZBW—Leibniz Information Centre for Economics, Kiel, Hamburg, 2020, http://hdl.handle.net/10419/216098

[90] H. Numan, M. Elareshi, and D. Atanasova, "Iraqi university Students' emergency remote learning experiences during COVID-19," *International Journal of Interactive Mobile Technologies (iJIM)*, vol. 16, no. 18, pp. 162–173, 2022, https://doi.org/10.3991/ijim.v16i18.31127

[91] J. Nabayra, "Teacher-made videos as learning tool in elementary statistics during the pandemic," *International Journal of Information and Education Technology*, vol. 13, no. 1, 2023, http://www.ijiet.org/show-184-2363-1.html

[92] R. Sagge and S. Bacio, "Students'competence in college geometry: Basis for development of computer-generated instructional materials," *Journal of Science and Mathematics Education in Southeast Asia*, vol. 42, 2019.

[93] S. Bacio and R. Sagge, "Development and production of computer-generated instructional materials for college geometry," *Journal of Physics: Conference Series*, vol. 1254, 012040, 2019, doi:10.1088/1742-6596/1254/1/012040

Copyright © 2023 by the authors. This is an open access article distributed under the Creative Commons Attribution License which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited (CC BY 4.0).