

Technical Difficulties And Challenges Of Students In Flexible Distance Learning: Basis For Instructional Intervention

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Abstract

The COVID-19 pandemic messed with the conventional education and has compelled higher education institutions to embrace distance learning that is flexible, posing considerable technical problems and challenges to students. The objectives of this research were to identify the online learning devices, the challenges faced in the synchronous and the modular distance learning, the degree of the technical difficulties faced by using different devices and the internet provision and the instructional interventions required to help the students in the new normal. The research design was descriptive-developmental and used a population of 192 students of Camarines Sur Polytechnic Colleges who were enrolled in the Bachelor of Technical-Vocational Teacher Education (BTVTED) course in the second semester of S/Y 2021-2022. The structured questionnaire was used to gather the data, which were analyzed with the frequency counts, weighted mean, percentages, and ranks. The findings had found out that the most common online learning tools were smartphones (47.91%) and mobile data (78.12%), and a general problem of students experienced was poor internet connectivity, poor access to good technology tools, and inadequate technical skills. The most significant synchronous learning challenges were bandwidth needs and quality of tools, and household responsibilities and assessment affected the modular learning. The general findings indicate that the issue of technological constraints, increased digital literacy and flexible support systems are in dire need of instructional intervention to provide equitable and quality education in the new normal.

Keywords: Flexible distance learning, Technical difficulties, Instructional intervention.

INTRODUCTION

The COVID-19 pandemic has affected the education sector greatly as institutions had to switch to flexible distance learning modes that revealed steep disparities in access and technology as well as in quality of instruction. In the Philippines, tertiary level students are still faced with intermittent internet, access to digital devices and poor technical skills and it is important to note that due to these challenges, ensuring quality education in the new normal is an urgent need.

Scholars around the world have recorded the challenges of distance learning, especially in situations where gap infrastructures worsens the learning process of students. According to Richards and Wright (2023), the American researchers asserted that the sudden shift to online education posed unprecedented challenges to both learners and professors, especially in terms of ensuring the quality of instruction and communication. Plage et al. (2023) in Australia pointed out that poor connectivity and access to flexible learning programs, particularly to the disadvantaged students was a major constraint to participation. In the same manner, African scholars like Nwokeocha (2021) evaluated the effects of COVID-19 on teaching and learning in the continent and found out that the infrastructural constraints and the absence of digital preparedness posed a significant barrier to equal access to education.

Rotas and Cahapay (2020) found the unstable internet and insufficient resources to be a significant hindrance to the university student, whereas Bustillo and Aguilos (2022) found that modular learning increased the digital divide among rural populations. Even though the works are insightful, they usually concentrate on rather general national trends, or individual modalities, and thus, there is the gap in knowledge about the technical challenges that students have to face when attending technical-vocational teacher education programs.

This research has a special contribution since it will analyze the special problems faced by BTVTED students at Camarines Sur Polytechnic Colleges. Contrary to the previous studies, it does not only determine the gadgets and internet services adopted, but also measures the degree of technical challenge individually in synchronous and modular learning contexts in a systematic fashion. Moreover, it examines instructional interventions based on the specifics of learners in provincial settings, therefore, providing a new understanding of the ways flexible learning can be rendered more fair and efficient.

OBJECTIVES OF THE STUDY

Guided by Republic Act 9155 and RA 10931, which mandate accessible and quality education, and aligned with the United Nations Sustainable Development Goal 4 on inclusive and equitable education, this study seeks to strengthen instructional planning and intervention strategies. Specifically, it aims to:

1. Identify the online learning gadgets used by BTVTED students.
 2. Determine the difficulties and challenges encountered in synchronous and modular distance learning.
 3. Assess the level of technical difficulty experienced with laptops, tablets, and mobile phones under varying internet conditions.
 4. Propose instructional interventions responsive to students' needs in the new normal.
- By systematically addressing these objectives, the study advances knowledge on flexible learning challenges in the Philippine context and provides actionable insights for educators, administrators, and policymakers to design interventions that empower learners with lifelong skills and competencies.

Scope and Delimitation of the Study

The present research aims to explore and evaluate the technical problems and issues faced by the students of the Bachelor of Technical-Vocational Teacher Education (BTVTED) in the Second Semester of Academic Year 2021-2022 and in Camarines Sur Polytechnic Colleges Nabua Camarines Sur. In particular, it looks at the categories of electronic devices and internet services among students, the challenges posed by both the synchronous and modular distance learning, as well as the degrees of technical challenges between the laptops, tablets, and mobile phones under different connectivity conditions. The paper also seeks to suggest instructional interventions that are sensitive to the new normal of flexible learning.

The study is confined to 192 BTVTED students who studied at College of Technological and Developmental Education. This study is narrowed down to their experience of online learning and modular learning programs and not their other programs and colleges in the institution. A structured questionnaire was used to collect the data and the analysis limited to descriptive statistics like frequencies, percentages, weighted means, and ranks.

Delimitation of the Study

The participants of the study are limited to 192 Bachelor of Technical-Vocational Teacher Education (BTVTED) students of Camarines Sur Polytechnic Colleges in the Second

Semester of Academic Year 20212022, but only on their gadgets and internet services usage, difficulties in synchronous and modular distance learning, and the degree of technical challenges in using laptops, tablets, and mobile phones depending on the connection availability levels. It covers none of the other programs or practices of the faculty and no more than greater institutional or national policy, and it is based only on the data collected with the help of a structured questionnaire and processed with the help of the descriptive statistics. The results obtained are specific to CSPC and are based on the unique circumstances of the pandemic, which makes them less applicable to other institutions or the post-pandemic environment.

METHODS OF RESEARCH

Research Design

The research design used in this study was descriptive-developmental research design which is most appropriate in describing the current situations and coming up with instructional measures using empirical findings. The descriptive dimension enabled the researcher to record systematically the documented technical problems and challenges encountered by students in flexible distance learning, whereas the developmental dimension formed a basis of the development of responsive instructional measures. The same design was chosen as it does not only capture the realities of the students experiences but also allows the development of viable solution, which is in line with the objectives of the study to enhance the delivery of instruction in the new normal.

Participants

The study respondents were 192 students of Bachelor of Technical-Vocational Teacher Education (BTVTED) at the Camarines Sur Polytechnic Colleges, Nabua, Camarines Sur, and the Second Semester of the 2021-2022 Academic Year. They were categorized under age, sex, economic status and the kind of the gadgets used in flexible learning. Total enumeration sampling was used to select the participants with all the students in the program being represented. This strategy was suitable since it gave a full picture of the population that is mostly impacted by the burdens of flexible learning.

Data Collection Techniques

A structured questionnaire was used as a means of data collection, as it is a universally recognized sample of data collection in normative surveys to measure attitudes, opinions, and experiences. The questionnaire was set in a way that it sought to solicit data on the devices in use, nature of challenges encountered during synchronous and modular learning and degree of technical challenges of various devices and internet services. This approach was selected as it is effective to cover a significant sample of respondents in the midst of the pandemic when it was impossible to organize face-to-face interviews and observations. One more reason why uniformity of responses was guaranteed is the use of a questionnaire, which could be compared and analyzed reliably.

Data Analysis Techniques

Descriptive statistical procedures were used to analyze the collected data; these were frequency counts, percentages, weighted means, and ranks. These methods were suitable to measure the use of particular devices, internet services and technical issues and to estimate the relative measure of the difficulties encountered by the students. The weighted mean was especially handy in explaining the degree of consensus of the respondents on different pointers of online and modular learning challenges. Through

these statistical tools, the study was also guaranteed to have valid and reliable findings, which formed a good ground to develop instructional interventions.

RESULTS AND DISCUSSIONS

Findings of this paper are given in direct proportion to the aims of the research, dependence of students on smartphones and mobile data, technical challenges in learning synchronously and in modules, and the interventions to be applied in the new normal. These results are explained together with the previous studies and the theories in question to highlight their importance, elucidate their value and contextualize the viable suggestions on enhancing the flexible distance education.

Online Learning Gadgets

Table 1. Electronic Gadgets Used in Online Classes

Electronic Gadgets	Frequency	Percentage	Rank
Smartphone	92	47.91	1
Desktop/Laptop with camera	50	26.04	2
Desktop/Laptop without camera	32	16.66	3
Tablet	18	9.37	4

The findings indicate that smartphones were the most popular device to be used (47.91%), and then laptops with cameras (26.04%). This observation is in line with the study by Haruna et al. (2019), who highlighted that mobile phones were ubiquitously present among students, and by the study conducted by Roschelle (2023), who expressed their educational benefits in the form of accessibility and collaboration. Nonetheless, the use of smartphones also demonstrates the lack of capacity in the abilities of the devices to complete complicated academic assignments, which is resonant with Suryaman et al. (2020), who discovered that insufficient ICT resources complicated successful home learning.

Internet Services

Table 2. Internet Services Used in Online Classes

Internet Service	Frequency	Percentage	Rank
Mobile Data	150	78.12	1
Broadband	42	21.87	2

Connectivity was a major challenge in that mobile data was the leading internet service (78.12%). Rotas and Cahapay (2020) also reported similar results and suggested unstable internet as one of the most frequent obstacles of Philippine students. Such dependence on cellular information reflects inequalities in access, which are typical in Plage et al. (2023) in Australia: the authors find that access problems limited the ability to participate in flexible learning program.

Synchronous Learning Challenges

Table 3. Online Synchronous Learning Difficulties

Indicator	Weighted Mean	Verbal Interpretation
High bandwidth/strong internet connection	4.27	Strongly Agree
Quality of technology tools	4.26	Strongly Agree
Technical skills in using tools	4.13	Agree
Flexibility of schedule	3.96	Agree
Availability of technology tools	3.86	Agree
Ease of use of technology tools	3.81	Agree

Students were extremely supportive of the fact that internet connectivity and technology tools quality were the biggest challenges that they faced. The results are consistent with Khalil et al. (2020), who also identified the same technical and methodological obstacles in synchronous learning. The challenge of managing domestic responsibilities and school assignments is also indicative of Kapasia et al. (2020) reports of a similar situation, where household conditions usually increase stress and decrease learning capabilities.

Modular Learning Challenges

Table 5. Modular Distance Learning Difficulties

Indicator	Weighted Mean	Verbal Interpretation
Limited access to modules	4.21	Strongly Agree
Difficulty in self-study	4.18	Agree
Lack of immediate teacher feedback	4.12	Agree
Overlapping household responsibilities	4.05	Agree
Motivation to complete tasks	3.92	Agree

Access to modules and inability to study on their own were cited by students as significant impediments. This is in line with Bustillo and Aguilos (2022) in the Philippines (Asia) who determined that modular learning increased the digital divide in rural communities. Other African researchers like Namatende-Sakwa et al. (2022) also reported the role played by the scarcity of resources and absence of feedback in deterring learning continuity.

Level of Technical Difficulty by Device

Table 6. Technical Difficulties Experienced by Students Using Gadgets

Gadget Type	Weighted Mean	Verbal Interpretation
Smartphone	4.25	Strongly Agree
Laptop	4.18	Agree
Tablet	3.95	Agree

Smartphones were rated as the hardest to use in academic work even though it is the most available. The article by Richards and Wright (2023) (United States) emphasized that although mobile devices enhance access, they lack ability to serve more intricate academic needs. This is an international dilemma: access need not necessarily mean academic sufficiency.

Instructional Interventions Proposed

Table 7. Suggested Instructional Interventions

Intervention	Weighted Mean	Verbal Interpretation
Provision of internet subsidies	4.33	Strongly Agree
Teacher training in flexible pedagogy	4.28	Strongly Agree
Development of mobile-friendly materials	4.22	Strongly Agree
Flexible scheduling of tasks	4.15	Agree
Peer support and mentoring	4.08	Agree

Internet subsidies and teacher training are important interventions with a high level of agreement among respondents. This observation is congruent with Plage et al. (2023) in Australia, who placed importance on equal access and teacher capacity-building in flexible learning. Likewise, Nwokeocha (2021) in Africa emphasized systematic underpinning of the digital preparedness.

Comparative Summary of Synchronous and Modular Challenges

Table 8. Comparison of Synchronous and Modular Learning Difficulties

Learning Modality	Weighted Mean	Verbal Interpretation
Synchronous	4.20	Strongly Agree
Modular	4.10	Agree

Modular learning was considered a bit easier than synchronous learning, which was mostly because of the unstable internet connectivity and devices. The result is in line with Aristovnik et al. (2023) (United States) who reported that synchronous online learning needs more bandwidth and technical preparedness. Such Asian oriented views like the one in the Philippines by Rotas and Cahapay (2020) also attest to the fact that connectivity is the most demanding impediment.

Considering African, Australian, American, and Asian voices, the findings prove that the issues experienced by CSPC students belong to the global trend of digital education inequities. The synchronous and the modular learning have brought to the fore the aspects of the infrastructure gap, the struggle with feedback, and self-study, and the limitations of the devices demonstrate that smartphones are not capable of performing complex academic tasks. International demands of systemic assistance are reflected in instructional interventions suggested by students as internet subsidies, teacher training, and mobile-friendly resources. These results confirm the existence of digital divide and education equity theories and provide viable information on how to create responsive, inclusive and sustainable teaching programs.

CONCLUSION

This paper set out to analyze the devices and web services adopted by BTVTED learners, technical challenges that they experience when pursuing the synchronous and modular distance learning, and teaching intervention required to facilitate flexible education under the new normal. The results showed that smartphones and mobile data were the most common tools of online learning, though students had constant problems with unstable connections, access to low-quality equipment, and a lack of technical capabilities, and synchronous learning was a bit more challenging than the modular one. These findings can be used to go about tackling the digital inequity issue by bringing to light the unique plight of technical-vocational teacher education learners and suggesting effective interventions that can be undertaken to address the problem, including internet subsidies, teacher training, and use of mobile-friendly learning resources. The study, however, had limitations in its scope; namely, a single institution was studied, information on the self-reported questionnaire was utilized, and the conditions during the pandemic were taken into account; this factor might not perfectly reflect the post-pandemic reality. Future studies ought to cover more institutions, utilise mixed-method designs to gain a more in-depth understanding and study the long-term effects of flexible learning on performance and employability, and thus build on theoretical bodies of work on digital equity and guide sustainable educational practices.

Recommendations for Future Research

Mixed-methods designs should be used in future studies to represent quantitative and qualitative aspects of student challenges, compare the experiences of the various academic programs and institutions to increase the generalizability, study the long-term effects of flexible learning on academic performance and employability, and consider policy-level interventions that can eliminate systemic inequities in digital access.

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