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Evaluating flexible learning adoption by the Philippine secondary school Teachers

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A B S T R A C T

Educators have been driven to embrace new technological platforms and tools to improve teaching and learning experiences by the rise of flexible learning. This study delves into the ways in which secondary school teachers from the DepEd in the Philippines utilize different types of internet access, gadgets, data plans, and social media platforms. To collect data from a convenience sample of teachers, an online survey was distributed using a quantitative approach. The purpose of the research was to determine whether and to what extent these technical aspects affect the efficacy and contentment of flexible teaching. The results showed that video conferencing platforms and learning management systems (LMS) are crucial, with video conferencing tools coming in second and LMS exhibiting the highest utilization. The most popular device is now a mobile phone, and the most popular operating system is Android. Although a large number of users enjoy consistently fast internet, a significant portion continues to deal with unreliable and sluggish connections. Among the most popular social media platforms for education, Facebook Messenger has the support of the majority of respondents and offers unlimited data rates. Results show that learning management systems (LMS) and video conferencing tools are critical, point to places where other technologies might be better integrated, and stress the influence that poor internet quality has on the effectiveness of instruction. This study helps fill gaps in the knowledge of the technology landscape in online and hybrid classrooms and offers suggestions for improving teaching methods. It would be beneficial for future studies to investigate how these technological aspects relate to particular results in terms of instructional efficacy and student involvement.

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RESUMO

Os educadores foram levados a adotar novas plataformas e ferramentas tecnológicas para melhorar as experiências de ensino e aprendizagem devido ao aumento do aprendizado flexível. Este estudo investiga de que maneiras os professores do ensino médio da DepEd nas Filipinas utilizam diferentes tipos de acesso à internet, dispositivos, planos de dados e plataformas de mídias sociais. Para coletar os dados de uma amostra de conveniência de professores, foi distribuída uma pesquisa online utilizando uma abordagem quantitativa. O objetivo da pesquisa foi determinar se e em que medida esses aspectos técnicos afetam a eficácia e a satisfação no ensino flexível. Os resultados mostraram que as plataformas de videoconferência e os sistemas de gerenciamento de aprendizagem (LMS) são essenciais, sendo que as ferramentas de videoconferência ocupam o segundo lugar e os LMS exibem a maior utilização. O dispositivo mais popular agora é o telefone móvel, e o sistema operacional mais utilizado é o Android. Embora um grande número de usuários tenha acesso consistente a uma internet rápida, uma parcela significativa continua lidando com conexões lentas e instáveis. Entre as plataformas de mídias sociais mais populares para educação, o Facebook Messenger tem o apoio da maioria dos entrevistados e oferece taxas de dados ilimitadas. Os resultados mostram que os sistemas de gerenciamento de aprendizagem (LMS) e as ferramentas de videoconferência são fundamentais, apontam para locais onde outras tecnologias poderiam ser melhor integradas e destacam a influência que a baixa qualidade da internet tem sobre a eficácia do ensino. Este estudo ajuda a preencher lacunas no conhecimento sobre o panorama tecnológico em salas de aula online e híbridas e oferece sugestões para melhorar os métodos de ensino. Seria benéfico para estudos futuros investigar como esses aspectos tecnológicos se relacionam com resultados específicos em termos de eficácia instrucional e engajamento dos estudantes.

Palavras-chave:
Aprendizagem Flexível, Utilização de Tecnologia, Sistemas de Gerenciamento de Aprendizagem (LMS), Conectividade com a Internet Ferramentas Educacionais

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Introduction

Amidst rapid technological advancements and evolving educational paradigms, traditional teaching and learning methods are being reexamined to meet modern demands (Gupta et al., 2023). The global COVID-19 pandemic accelerated the adoption of flexible learning, compelling educational institutions to innovate and adapt to digital teaching approaches. This shift has underscored the necessity for educators to effectively integrate technology into their instructional methods, fostering a more resilient and adaptable learning environment (Filho et al., 2022).

Extensive academic research highlights the profound impact of flexible learning on student engagement and academic performance. Bower et al. (2021) emphasize how technology-enhanced environments contribute to improved learning outcomes, while Haleem et al. (2022) stress the role of digital tools in accommodating diverse learning needs. However, the success of flexible learning largely depends on educators' technological competence and willingness to adopt innovative instructional methods.

In the Philippine context, the implementation of flexible learning has been met with both enthusiasm and challenges (Casro, 2019). The Department of Education (DepEd) introduced various strategies, including online learning platforms and modular instruction, to support students and teachers during the pandemic. Despite these efforts, disparities in digital access and teachers' technological proficiency persist (Panoy et al., 2022). Abel (2020) further highlights that while resources are available, issues related to infrastructure, internet connectivity, and professional training continue to hinder the seamless adoption of flexible learning. These findings underscore the ongoing need for targeted support and professional development programs (Arinto, 2013).

This study seeks to bridge existing gaps by conducting a comprehensive assessment of flexible learning implementation among secondary school teachers in DepEd. Specifically, it aims to evaluate teachers' use of technology, instructional methodologies, and overall preparedness for flexible learning environments. While prior studies provide valuable insights, a holistic analysis of how secondary school teachers across different contexts in the Philippines integrate flexible learning remains limited. Addressing this gap will contribute to a deeper understanding of the current state of flexible learning and identify areas for improvement.

Key challenges addressed in this study include unequal access to technology, device compatibility, internet connectivity, and the effectiveness of teaching materials. The research will also analyze shifts in instructional delivery before, during, and after the pandemic while assessing educators' confidence in using online platforms and their readiness for flexible learning based on their experiences and attitudes. Identifying these challenges will inform policies that enhance digital literacy, resource accessibility, and instructional adaptability in flexible learning environments.

To provide a strong theoretical foundation, this study is guided by the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). TAM, developed by Davis (1989), suggests that educators' acceptance of technology is influenced by perceived ease of use and perceived usefulness—factors that directly impact their willingness to integrate digital tools into teaching. If educators find online platforms user-friendly and beneficial in improving instruction, their adoption of flexible learning technologies increases. Meanwhile, UTAUT, introduced by Venkatesh et al. (2003), expands on TAM by incorporating performance expectancy, effort expectancy, social influence, and facilitating conditions, offering a more comprehensive understanding of external and contextual factors affecting technology use. Institutional support, peer influence, and infrastructure development significantly shape educators' attitudes and readiness toward flexible learning adoption.

By applying these models, this study will examine the psychological, social, and environmental factors influencing teachers' adoption of flexible learning technologies. Insights from this research will help develop targeted interventions, such as training programs, infrastructure improvements, and policy frameworks, ensuring the effective and inclusive integration of digital tools in education. Ultimately, this study aims to contribute to a more adaptive and equitable learning environment that meets the evolving demands of Philippine education.

With the aim of this study to evaluate the Teachers' Technology Utilization, Instructional Methods, and Readiness, it seeks to address the following questions:

How do the respondents evaluate their technology access and use in relation to flexible learning in terms of: Technology tools being currently used or accessed to; Devices currently used; Type of Handsets Operating System; Type of Internet Access; Quality of Internet Connection; Used Internet Data Plan; and Social Media Platforms Used?

What teaching and learning materials are regularly used by the respondents in flexible learning?

What instructional delivery methods are used by the respondents in terms of: Pre-Pandemic Period; Pandemic Period; and Post-Pandemic Period?

How confident are the respondents in using online platforms relevant to flexible learning?

How ready are the respondents in implementing flexible learning in terms of their: Experiences; and Attitudes?

Methodology

This study used a quantitative research approach (Abenes et al., 2024) to investigate several aspects of flexible learning among teachers at the Department of Education (DepEd) throughout the Philippines. This methodology entails the gathering of quantitative data using

organized questionnaires, therefore enabling the detection of trends and patterns pertaining to the applications of technology, instructional techniques, and the preparedness and attitudes of teachers. The study employed an internet-based questionnaire (Balbin & Balbin, 2024) to gather data from several regions of the Philippines. Given the geographical diversity of the respondents, this approach was deliberately selected to maximize reach and inclusiveness. By utilizing an internet-based platform, the survey successfully reached teachers in both metropolitan and rural regions, covering a diverse range of educational environments and situations.

The survey's online dissemination enabled widespread participation, enabling educators from diverse regions, including those in remote or less inaccessible areas, to share their experiences and perspectives on flexible learning. This strategy proved to be very successful in reaching teachers who may have otherwise been excluded because of geographical limitations or logistical difficulties linked to conventional paper-based surveys. Moreover, the utilization of an internet platform facilitated the acquisition of data in a time-effective manner, thereby guaranteeing the availability and timely analysis of responses. Furthermore, this approach offered participants the opportunity to conveniently complete the survey (Doorman et al., 2021), therefore potentially enhancing both the rate of response and the quality of the gathered data.

A broad representation of DepEd teachers from across the Philippines was achieved via the online survey approach, which captured a wide range of opinions and settings pertaining to flexible learning. Nevertheless, although this approach improved the inclusiveness and scope of the research, it also emphasizes the need of taking into account the digital literacy and internet connectivity of participants, which can differ among various locations and experiences.

Respondents

The respondents in this study are teachers employed by the Department of Education (DepEd) in secondary schools or basic education institutions in the Philippines totaling to 1, 028 respondents. The selection of participants was conducted using a convenient sample technique (Doorman et al., 2021), whereby individuals were picked based on their ease of access and desire to take part. This sampling methodology guarantees that a heterogeneous cohort of educators from different geographical areas and educational institutions can offer significant perspectives on their encounters with adaptable language instruction (Scholtz, 2021).

It is crucial to acknowledge that although this approach enables the gathering of a wide variety of responses, it may also restrict the applicability of the results to the whole population of DepEd teachers. The study's emphasis on secondary and basic education teachers

accentuates its significance to individuals directly engaged in foundational and middle education levels, providing a detailed recognition of their particular requirements and viewpoints on flexible learning.

Data Analysis

A range of descriptive statistical techniques were employed to comprehensively analyze and evaluate the responses obtained from the online survey in this study. In order to ascertain the frequency of various technological tools and gadgets, percentages were computed, therefore offering valuable insights into the relative usage of each specific tool or method among the participants. The percentages provided insight into the degree to which teachers utilized various social media platforms and internet connection types in their flexible learning strategies (Shang et al., 2022). Assessment and interpretation of teachers' overall confidence and preparedness in using different online platforms and instructional approaches were conducted using mean scores (Andrade, 2020). To determine the average level of confidence that respondents had in using tools such as Messenger Group Chat and Learning Management Systems, the study computed the mean scores. These average scores provided a concise representation of overall attitudes and degrees of preparedness among the respondents included in the survey. Furthermore, standard deviations were employed to quantify the dispersion in responses, therefore enhancing comprehension of the degree of consistency or uncertainty in the opinions and confidence levels of the teachers (McGrath et al., 2020).

A smaller standard deviation suggests that the responses from the participants were closely clustered around the average or mean value (Dalmaijer et al., 2022). This indicates a high level of consensus among the respondents, meaning that most of them shared similar opinions, experiences, or levels of understanding regarding the topic at hand. In this context, it reflects that the educational professionals involved in the study likely had a strong level of agreement, aligning closely in their views or assessments.

On the other hand, a larger standard deviation signifies greater variability in the responses. This means that the answers were spread out over a wider range, reflecting differing opinions, levels of confidence, or varying expertise among the respondents. In the case of educational professionals, a higher standard deviation could indicate that while some may have felt very confident or knowledgeable about a particular topic, others may have had less certainty or different perspectives, leading to a more diverse range of responses (Osimo et al., 2020).

Results & Discussion

Table 1.

Technology tools currently accessed and used by the respondents

Rank	Technology Tool	Usage Percentage
1	Learning Management System	87.40%
2	Video Conferencing Platform	79.40%
3	Student Response Systems	55.90%
4	Collaboration Tools	52.40%
5	Others	24.80%

The table shows educational technology tool utilization percentages. The Learning Management System (LMS) has the highest usage rate of 87.40%, showing its essential position in course content management and student interaction. The Video Conferencing Platform, used by 79.40% of users, supports real-time engagement and distant learning. Student Response Systems are used 55.90% of the time, demonstrating they are less important than LMS and video conferencing systems for interactive learning and formative evaluation. Collaboration Tools, with 52.40% utilization, are also used, but less so, indicating that while they aid group work and collaborative learning, they are not as important to the educational toolbox. "Others," which includes several more tools, has a 24.80% usage rate. This shows that these techniques are rarely used or not integrated into instructional procedures.

This research highlights that Learning Management Systems (LMS) and video conferencing platforms play a pivotal role in contemporary educational practices, serving as essential tools for course management and fostering interactive learning. While Student Response Systems and Collaboration Tools are employed in interactive and collaborative learning environments, their lower popularity suggests potential areas for further focus and integration. The presence of diverse tools in the "Others" category underscores the continuous evolution of educational technology and the growing need to customize digital tools to meet the varied demands of modern education.

Camilleri and Camilleri (2021) found that combining LMS with video conferencing significantly enhances student engagement and communication, making it a key factor in the effectiveness of digital learning environments. Furthermore, Sprenger and Schwaninger (2021) emphasized that although Student Response Systems and Collaboration Tools are valuable in promoting interactive and collaborative learning, their adoption may vary across

different educational settings. The constant development of "Other" tools indicates that educational technology is in a state of flux, necessitating adaptable and customized approaches to fulfill the diverse and evolving needs of educators and students.

Table 2.

Devices currently accessed and used by the respondents

Rank	Devices	Usage Percentage
1	Mobile Phone	89.80%
2	Laptop	85.70%
3	Desktop PC	21.10%
4	Tablet/iPad	16.10%
5	Interactive Whiteboards	10.00%

The table shows respondents' educational device usage percentages. With 89.80% usage, mobile phones are the most popular device. This high figure implies that mobile phones are a vital tool for many users due to their portability and versatility. Following closely is the laptop, used by 85.70%. This gadget is essential for homework, research, and communication. Laptops' widespread use emphasizes their versatility. Desktop PCs are used by 21.10% of respondents. This lower percentage may indicate a move toward more portable devices or a preference for laptops over desktops in education. Tablets and iPads are utilized by 16.10% of users, demonstrating they are used less but have a niche function for specific jobs or preferences. Interactive whiteboards are the least used device at 10.00%. This lower percentage may imply that respondents utilize interactive whiteboards in specialized circumstances or rarely.

Because respondents could choose numerous devices they use or have access to, these percentages do not sum up to 100%. This versatility shows that while mobile phones and laptops dominate, desktops, tablets, and interactive whiteboards also play roles in education. These patterns are demonstrated by related studies. According to the findings of Nikolopoulou (2020), mobile phones and laptops are utilized extensively at educational institutions for the purpose of gaining access to digital content and communicating with one another. Buchner et al. (2021) state that the factors that influence the use of desktop computers and tablets include educational demands and environments. Mokoena (2022) notes that interactive whiteboards, while offering valuable interactive features, are not as frequently utilized compared to other devices that are more portable or versatile. Despite their potential to enhance engagement in the classroom, their relatively lower adoption may be attributed to the growing preference for more mobile and adaptable technologies, which provide greater flexibility in various learning environments.

Table 3.

Type of Handset Operating Systems

Rank	Device	Usage Percentage
1	Android	88.30%
2	IOS	11.00%
3	Others	0.70%

The table shows respondents' handset operating system usage percentages. The statistics shows that Android is the most popular OS at 88.30%. Probably due to their large selection of models, price, and flexibility, Android devices are the most popular among responders. However, 11.00% use iOS. This lower percentage shows that iOS devices are popular, especially among Apple fans, but less common than Android devices in the sample. Only 0.70 percent of "Others" is used. This chart shows that only a small percentage of handset users utilize operating systems other than Android or iOS, demonstrating their market dominance. The percentages are 100% because respondents had to choose one operating system. This distribution shows that Android is preferred over iOS and that other operating systems are rarely used.

The findings of the investigations lend credence to these conclusions. As a result of its extensive selection of devices available at a variety of pricing points, Chmielarz (2020) discovered that Android is the dominant operating system in the global smartphone market. According to Garg and Baliyan (2021), iOS has a strong position in the market, but it has a significantly lesser market share than Android, which shows that iOS has a more specialized user base. The article "Unwanted App Distribution on Android Devices (2021) makes the observation that the mobile device business is dominated by these two major players, while the other operating systems are underrepresented.

Table 4.

Type of Internet Access

Rank	Internet Connection	Usage Percentage
1	Home Wi-Fi	51.20%
2	Mobile Data	31.00%
3	School/Workplace Wi-Fi	16.50%
4	Others	0.40%

The table shows respondents' internet access usage percentages. Home Wi-Fi is the most popular internet connection, with 51.20% usage, suggesting that over half of respondents use it. This implies a preference for stable, fast internet for business or education. 31.00% of respondents utilize mobile data for internet access, likely due to its flexibility and availability in places without fixed connections. School/Workplace Wi-Fi ranks third with 16.50% of respondents utilizing it for internet. This lower percentage may imply that many people prefer home or mobile connections over institutional networks owing to availability or privacy concerns. Others—alternative or less common internet connections—make up 0.40%. The majority of respondents used home Wi-Fi, mobile data, and institutional Wi-Fi, as seen by this low figure.

The percentages are one hundred percent due to the fact that every responder selected one primary internet access type. Based on the findings of Oughton et al. (2021), it was discovered that home Wi-Fi is the most often used internet connection because of its dependability for streaming, online learning, and working remotely. The use of mobile data continues to be widespread, particularly in regions where fixed internet connections are either not available or prohibitively expensive (A Key 6G Challenge and Opportunity—Connecting the Base of the Pyramid: A Survey on Rural Connectivity, 2020). The smaller percentage of people who use school and corporate Wi-Fi networks might be explained by the fact that these networks are frequently utilized in addition to personal internet connections, as stated by Canton (2021).

Table 5.

Quality of Internet Connection of the Respondents

Rank	Connection Stability	Usage Percentage
1	Stable, Fast Connection	59.20%
2	Unstable, Slow Connection	40.80%

The table shows respondents' internet connection quality by stability. 59.20% of respondents have a Stable, Fast Connection, indicating stable and fast internet. This means that most users can undertake data-intensive internet activities like video conferencing, streaming, and others without frequent interruptions. 40.80% of respondents report an Unstable, Slow Connection, indicating a large number of users with connectivity troubles. This may hinder remote learning, work, and other internet-dependent tasks, causing annoyance and productivity loss.

Since respondents were asked to choose only one category, the percentages sum 100%, revealing the group's internet connection quality. Hennessy et al. (2022) found that many users, particularly in developing countries, experience slow or inconsistent internet

connections, which might impair educational and professional success. Valentín-Sívico et al. (2023) also notes that rural and underserved locations frequently have slower, less dependable internet connections, explaining the high percentage of responders with unreliable connections.

Table 6.

Internet Data Plan Used by the Respondents

Rank	Data Plan Type	Usage Percentage
1	Unlimited	54.50%
2	Limited with a Specific Data Cap	37.20%
3	No Personal Data Plan (Rely on School/Workplace)	8.40%

The table shows respondents' internet data plan usage percentages. More over half of respondents, 54.50%, use an Unlimited Data Plan, showing they prefer it. Online study, streaming, and remote work require consistent internet connectivity without data issues, which may explain this desire. After that, 37.20% utilize a Limited Data Plan with a Cap. This suggests that a large percentage of consumers limit their internet usage owing to cost or plan limits. Finally, 8.40% of respondents use school/workplace internet rather than a personal data plan. This smaller percentage may represent those who only use institutional internet connections or don't invest in personal internet services.

Due to the fact that respondents are required to select a single data plan, the percentages are 100%. According to Theodorakopoulos (2024), consumers who consume a lot of data, such as those who work remotely or are students who study online, prefer unlimited data plans. According to the findings of a survey, limited data plans are popular primarily due to their affordability; however, these plans may lack the necessary flexibility for more demanding online activities (A Survey on Data Pricing: From Economics to Data Science, 2022).

Smith and Jones (2023) further discovered that despite the importance of having internet access at school and in the workplace, many users still prefer personal data plans to ensure a more consistent and higher level of connectivity (Cullinan et al., 2021). This suggests that while institutional access is crucial, personal data plans provide users with greater control over their connectivity, especially for intensive or uninterrupted use.

Table 7.

Social Media Platforms Used for Flexible Teaching by the Respondents

Rank	Platform	Usage Percentage
1	Facebook Messenger	91.60%
2	Facebook Page/Private Group	72.00%
3	Tiktok	19.60%
4	Twitter & Others	17.50%
5	Instagram	15.60%
6	Telegram	9.40%
7	Viber	6.70%
8	Youtube	6.70%

The table shows respondents' flexible teaching social media usage rates. Note that respondents might chose numerous platforms that applied to them, therefore the percentages are not 100%. Facebook Messenger is the most popular flexible teaching platform, with 91.60% of respondents using it. This implies that Facebook Messenger is popular for collaborating with students and distributing materials due to its direct contact features, convenience of access, and familiarity.

Following closely, 72.00% of responders use Facebook Page/Private Group. This suggests a preference for controlled places for course materials, announcements, and conversations for teachers and students. In contrast, 19.60% of respondents utilize Tiktok, demonstrating its expanding significance in education, particularly for posting short, engaging videos. Twitter & Others are used by 17.50%, demonstrating that these channels are less central but nevertheless play a part in flexible education, possibly for short updates or extra materials. Instagram is used by 15.60% of respondents, possibly for its visual appeal and educational content.

Telegram and Viber are used by 9.40% and 6.70% of respondents, respectively, as specialist communication technologies for instructors and students. With 6.70%, YouTube is used to share and access long-form video content, suggesting it is a content repository rather than a direct communication medium for flexible teaching.

Since respondents were allowed to choose all platforms, the percentages show how each platform complements the flexible teaching structure, with Facebook Messenger and Facebook groups as the main instruments. Manca (2020) found that Facebook is the most popular educational social media network because to its enormous reach, user familiarity, and communication and information delivery capabilities. Meirbekov et al. (2024) also note a rise in instructional use of Tiktok and Instagram, especially for creative and interactive content

with younger students. Makki & Bali (2021) note that Telegram and Viber are being used more by educational communities, although Facebook remains the dominant platform.

Table 8.

Teaching and Learning Materials Regularly Used in Flexible Learning

Rank	Learning Material	Usage Percentage
1	PowerPoint Presentations	81.60%
2	Downloaded Learning Materials	78.40%
3	Worktext	76.70%
4	Digital Textbooks/E-books	76.10%
5	Online Articles/Resources	62.40%
6	Textbooks	61.10%
7	Videos	60.60%
8	Interactive Simulations/Games	49.30%
9	Handouts	46.90%
10	Open Educational Resources	33.90%
11	Modules	28.20%
12	Manuals	25.90%
13	Pamphlets	9.50%

The table shows flexible learning environment teaching and learning material usage percentages. The overall percentage exceeds 100% because respondents were allowed to choose numerous materials for their teaching approaches. PowerPoint presentations are the most popular teaching tool, with 81.60% of respondents using them. PowerPoint is widely used to conduct lessons, graphically organize content, and engage students through slideshows. Downloaded Learning Materials are used by 78.40% of respondents, indicating that pre-existing digital resources are a popular choice for flexible learning, allowing educators to deliver easily available content to students. Worktexts and Digital Textbooks/E-books are also heavily used (76.70% and 76.10%, respectively). Flexible learning requires both traditional work-based materials and digital forms, which give students planned activities and accessible readings.

Online Articles/Resources (62.40%) and Textbooks (61.10%) remain popular, with instructors combining conventional and online sources to balance learning. Video use is 60.60 percent, demonstrating the power of multimedia to engage and educate students. Interactive Simulations/Games (49.30%) are getting more popular, showing a shift toward interactive

learning environments. Handouts (46.90%) and Open Educational Resources (33.90%) provide students with additional reference material in flexible learning. Modules (28.20%), Manuals (25.90%), and Pamphlets (9.50%) are less commonly used, demonstrating that while they are useful in some settings, educators in flexible learning environments do not employ them mostly.

Davidse (2021) found that PowerPoint presentations and digital materials dominate online and blended learning environments due to their simplicity of use and ability to deliver structured content. Zheng st al. (2023) also indicate that movies and interactive simulations are increasingly engaging pupils online, supporting this usage. Hilton (2020) also note the growing use of Open Educational Resources (OER), which are still new compared to textbooks and downloaded materials.

Table 9.

Mode of Delivery Used During Pre-Pandemic Period

Rank	Mode of Delivery	Usage Percentage
1	Primarily In-Person with Some Online Components	43.70%
2	Messenger Group Chat	16.20%
3	Modular	14.00%
4	Learning Management System	8.90%

In the table, respondents' most prevalent instructional delivery techniques are listed before the pandemic. Respondents could choose various methods; thus, the total exceeds 100%. Pre-pandemic, 43.70% of respondents said Primarily In-Person with Some Online Components was their main educational method. This reflects the conventional focus on face-to-face training and limited online activities like posting notifications or resources. Following this, 16.20% used Messenger Group Chat. This suggests that educators were using social media before the epidemic to communicate and update pupils in an informal but effective way. Students received printed or digital modules for modular training, which accounted for 14.00%.

In areas with poor internet access, this strategy emphasizes the need for self-paced learning materials that students can access. 8.90% of responders used the Learning Management System (LMS), indicating that LMS platforms were available but underutilized before the epidemic. This may indicate reluctance to fully integrate digital technologies when in-person learning was the norm.

Singh et al. (2021) found that blended learning (a mix of in-person and online components) was steadily gaining popularity before the pandemic, but its adoption was restricted compared to the abrupt shift then. Jordan and Mitchell (2020) also note the growing

relevance of social media platforms like Messenger in educational communication before significant digital revolution. Edgley (2021) notes that many educational institutions still used in-person training, hence Learning Management Systems were rarely used pre-pandemic.

Table 10.

Mode of Delivery During the Height of Pandemic

Rank	Mode of Delivery	Usage Percentage
1	Modular	53.60%
2	Video Conferencing	14.60%
3	Messenger Group Chat	13.10%
4	Learning Management System	9.40%

The table shows how instructional delivery changed in response to in-person learning limits during the pandemic. Because respondents could choose numerous ways, the percentages don't add up. The most popular delivery method was modular teaching, with 53.60% of respondents using it. Printed or digital modules are likely the main mode of teaching, especially in distant or underserved locations, due to internet connectivity or infrastructural issues. Modular learning let students study at their own speed during school closures.

Using Zoom, Google Meet, or Microsoft Teams to hold live online classrooms was the second most popular technique, with 14.60%. Video conferencing became vital during the pandemic, but connectivity, device availability, and instructor preparedness prevented its widespread adoption. Messenger Group Chat was used by 13.10% of respondents, demonstrating social media's continued use as an informal but effective method for communication and lesson delivery. It gave teachers and students a familiar, low-bandwidth connection. 9.40% of respondents used the Learning Management System (LMS), up somewhat from pre-pandemic levels. LMS platforms provided more structured online learning settings, but their use was limited due to technical issues or a lack of digital literacy.

Bumblauskas and Vyas (2021) found that modular and asynchronous learning was used worldwide during the pandemic, even in areas without internet. Hacker at al. (2020) also notes the rise of video conferencing tools, however use varied by technological infrastructure. Mbodila et al. (2020) note that social media like Messenger kept communication and instruction going, even when traditional online learning systems were impractical. During the pandemic, universities tried to integrate digital resources into their teaching practices, and Turnbull et al. (2020) highlight the limited use of Learning Management Systems.

Table 11.

Mode of Delivery Used During the Post-Pandemic Period

Rank	Mode of Delivery	Usage Percentage
1	Primarily In-Person with Some Online Components	53.90%
2	Modular	9.90%%
3	Messenger Group Chat	8.90%
4	Learning Management System	8.30%

The table lists instructional delivery modalities used during or after the pandemic. Because respondents might choose numerous distribution methods, the percentages approach 100%. Primarily In-Person with Some Online Components is the most frequent post-pandemic delivery method, with 53.90% of respondents using it. This returns to classroom education while preserving some pandemic-era internet tools and practices. It shows that educators and institutions prefer a hybrid strategy that combines face-to-face training with digital resources for flexibility and better learning.

Modular training is still used by 9.90% of responders. Module use has dropped since the pandemic, but their continued use implies they are still useful, especially in environments with sporadic in-person learning or internet connectivity. Messenger Group Chat is still used by 8.90% of respondents, demonstrating social media's importance for student communication and cooperation. This shows that pandemic-era informal communication skills have been absorbed into instructional processes. LMS use is 8.30%, somewhat lower than pre-pandemic levels. This suggests that while LMS capabilities are important, many instructors and institutions have reduced their usage of fully online learning environments when in-person sessions resume.

Sulaiman et al. (2023) found that schools and institutions are combining in-person instruction with pandemic-era digital developments to create a hybrid learning environment. Müller and Wulf (2021) also note the reduced but continuous use of modular and online learning materials for flexible instruction. As teachers use social media into their lessons, Rosa Damascena (2024) underlines the importance of informal communication mechanisms like Messenger. Al-Maroof et al. (2021) concludes that LMS platforms remain important but have declined as face-to-face learning grows.

Table 12.

Mean and SD Values on the Confidence Level in Using Online Platforms

Platform	Mean	SD	Interpretation
E-Mail	4.32	0.846	Completely Confident
Facebook Group	4.39	0.763	Completely Confident
Messenger Group Chat	4.52	0.694	Completely Confident
Video Conferencing (Zoom)	4.15	0.896	Fairly Confident
Learning Management System (Google Classroom)	4.09	0.929	Fairly Confident
Over-all	4.29	0.826	Completely Confident

In the table, respondents' trust in different online platforms for flexible learning is shown as mean and SD. More confident respondents had higher means. Messenger Group Chat has the highest mean (4.52, 0.694 SD). This indicates "Completely Confident" Messenger use for school communication and cooperation. The modest standard deviation matches respondent confidence. Messenger is familiar to teachers and students from its widespread use before the outbreak. Messenger's accessibility, usability, and real-time communication appeal to schools. Due to their ease of use and speed, educators will continue to use social media platforms post-pandemic; Messenger is highly trusted. Salmon & Edirisingha (2021) and Manca & Ranieri (2022) found that educational communication requires digital platforms like Messenger in flexible learning contexts. Online communication, engagement, and collaborative learning are promoted by these platforms.

LMS has the lowest mean, 4.09, and 0.929 standard deviation, indicating "Fairly Confident" use. The higher standard deviation than Messenger suggests that some respondents may struggle to use all LMS functions. Some educators struggle to use all LMS capabilities, although many are proficient. Google Classroom users are less confident than social media users, suggesting educators need more training to use LMS systems to organize, distribute, and assess learning content. While Learning Management Systems are vital for online and hybrid learning, Loureiro et al. (2021) discovered that instructors and students still have a high learning curve. Donath et al. (2020) additionally emphasizes LMS professional development to assist teachers leverage the platform's many tools for instruction.

Online platform confidence is 4.29 with an SD of 0.826, indicating "Completely Confident" respondents. This mean value shows good confidence across platforms, with tool-specific variances. Instructors feel confident using online platforms, but LMS may need more help and training to be more effective. Ahmed and Opoku (2021) reported that instructors were confident using online tools and platforms, depending on technology complexity and

familiarity. Austin (2020) emphasizes professional growth to build trust in various instructional tools.

Table 13.

Teachers' Flexible Learning Readiness Based on their Experiences

Benchmark Statements	Mean	SD	Interpretation
I have undergone training in flexible learning modality.	4.00	0.935	Agree
I have used technology to support my face-to-face teaching.	4.45	0.729	Strongly Agree
I have used modules in teaching my classes.	4.4	0.788	Strongly Agree
I have used books or other references in teaching my classes.	4.59	0.640	Strongly Agree
I have experienced giving activities to my students which can be done online or offline.	4.14	1.026	Agree
I have used online quizzes/assignments in teaching my classes.	3.94	1.138	Moderately Agree
I have used online and offline resources in teaching my classes.	4.33	0.872	Strongly Agree
I have used virtual classroom tools like Google Classroom, Edmodo.	3.70	1.237	Moderately Agree
I have used Messenger in teaching my classes.	3.97	1.132	Moderately Agree
Over-all	4.17	0.935	Moderately Agree

The table shows teachers' mean and SD values for flexible learning based on their experiences. Increased mean scores indicate readiness. The benchmark statement "I have used books or other references in teaching my classes," had the highest mean, 4.59, and SD, 0.640. This shows that respondents "Strongly Agree" and are ready to use traditional resources for flexible learning. The low standard deviation shows response consistency, emphasizing the usefulness of conventional teaching resources. The substantial support for books and references shows that traditional educational materials are still relevant in flexible learning contexts. This shows that while current tools are helpful, core resources are essential for teaching. Ayu (2020) found that books and references remain important in education, even as flexible learning modes grow.

The benchmark statement with the lowest mean, "I have used virtual classroom tools like Google Classroom, Edmodo," averages 3.70 and has an SD of 1.237, indicating that respondents "Moderately Agree" with it. The increased standard deviation shows virtual classroom tool experiences and confidence vary. Virtual classroom tools are used by certain teachers, however there is opportunity for enhancement and adoption. This variability suggests virtual classroom tool training and assistance are needed. Bragg et al. (2021) examine

the pros and cons of adopting virtual classroom tools in teaching and the necessity for continual professional development to improve instructors' skills and confidence.

According to the Overall Readiness score of 4.17 with an SD of 0.935, respondents "Moderately Agree" with their flexible learning readiness. This mean value reflects a positive attitude toward flexible learning but also areas for improvement. The overall readiness rating implies that teachers are largely prepared for flexible learning, but some areas need more focus and support to improve preparedness and effectiveness. Hill (2021) notes that instructors' flexible learning preparedness varies and that personalized professional development is needed to address specific requirements and problems.

Table 14.

Teachers' Flexible Learning Readiness Based on their Attitudes

Benchmark Statement	Mean	SD	Interpretation
I believe that flexible learning has the same quality as classroom instruction.	4.17	0.885	Agree
I believe that high-quality learning experiences can occur with flexible learning modalities.	3.74	1.196	Moderately Agree
I recognize that community building is an important component of flexible learning.	4.53	0.671	Strongly Agree
I feel comfortable communicating online/offline and feel that I can effectively engage with students in a flexible learning environment.	4.29	0.805	Agree
I am a critical thinker and can develop assignments that encourage higher-order thinking in a flexible learning environment.	4.35	0.731	Strongly Agree
Over-all	4.22	0.858	Strongly Agree

The table shows instructors' flexible learning attitudes' mean and SD values. Positivity is indicated by higher mean scores. The benchmark statement "I recognize that community building is an important component of flexible learning," has the highest mean of 4.53 and SD of 0.671. Respondents "Strongly Agree" that flexible learning settings require community building. The low standard deviation indicates that respondents agree on the importance of community.

The consensus on community building implies that teachers value it as essential to flexible learning. It emphasizes the necessity for adaptable learning methodologies that encourage

student involvement and support. Salas-Pilco et al. (2022) found that strong social ties improve student engagement and learning in flexible and online learning contexts.

The lowest mean, "I believe that high-quality learning experiences can occur with flexible learning modalities," was 3.74 and the SD was 1.196, indicating that respondents "Moderately Agree" with it. The increased standard deviation reflects diversity in flexible modalities learning quality perceptions. The modest agreement on the quality of flexible learning experiences suggests that some teachers see high-quality education possibilities, while others may have misgivings. Flexible learning approaches must be evaluated and improved to satisfy educational standards. Ossiannilsson (2020) highlight the problems and potential of guaranteeing high-quality learning in flexible learning environments, emphasizing the need for continuing research and instructional practice development.

The overall attitude toward flexible learning is 4.22 with an SD of 0.858, indicating that respondents "Strongly Agree" with its concepts and practices. This mean value shows teachers' positivity. The positive attitude toward flexible learning shows that teachers are generally supportive and confident in it, but there are areas that might use improvement. Jevsikova et al. (2021) notes the growing acceptability and favorable attitudes toward flexible learning and areas for improvement to boost efficacy and teacher confidence.

Conclusion

The study sheds light on flexible learning among Philippine secondary and basic education DepEd teachers. The study examines technology tools, devices, instructional approaches, and teachers' confidence and preparation for flexible learning to identify trends and areas for development. The findings show that instructors are confident in using social media platforms for communication and education, preferring familiar and accessible methods like Messenger Group Chat. However, educators are typically comfortable using online platforms, but their confidence in Learning Management Systems (LMS) varies, highlighting the need for extra training and assistance. The study also shows the extensive use of numerous educational resources and the change of teaching methods during and after the pandemic. The research emphasizes the need for ongoing professional development and assistance to help educators use flexible learning methods. The study illuminates how flexible learning is changing technology and training. It emphasizes tailored interventions to address specific issues and gaps, particularly in boosting LMS platform usability and effectiveness and teacher preparedness and confidence in flexible learning contexts. This research can inform policy and practice, helping flexible learning educators construct more successful and inclusive approaches.

Recommendations

Several study recommendations aim to improve DepEd teachers' flexible learning implementation and effectiveness. First and foremost, teachers' LMS and other online tool skills must be improved through extensive training programs. Regular training, webinars, and hands-on sessions should improve confidence and ensure platform utilization. Given teachers' confidence in utilizing social media platforms like Messenger, integrating them into the teaching process may be advantageous in addition to training. Teachers can use social media efficiently and supplement other instructional techniques by developing best practices. Resource allocation and access are crucial. Access to digital textbooks and interactive simulations can support varied teaching demands and improve learning. Fostering teacher community through cooperation and support can also help implement flexible learning techniques. Teachers should provide regular feedback on tool and approach efficacy. These observations will help enhance resources and satisfy educators' and students' changing needs. Teachers need strong technical support to resolve online platform and technology difficulties quickly and effectively.

Limitations

The study provides insight into DepEd teachers' flexible learning approaches, but it has significant downsides. First, the sample may not reflect all Philippine DepEd teachers due to convenient sampling. This strategy is useful for reaching a wide range of individuals, although selection bias may limit generalizability. The sample may not fully represent all teachers' various instruction experiences due to demographic and regional factors. Second, the study used online survey self-reported data. Participants may give socially desired answers or misrepresent their confidence and skill with flexible learning aids in this manner. Participants' self-assessments may not match their real experiences or abilities, affecting response accuracy. Study scope is another restriction. It addresses technology use, teaching approaches, and teachers' confidence, but it may not cover all key factors affecting flexible learning. This study did not include contextual variables including institutional support, resource availability, and teacher technological knowledge, which could also affect flexible learning. Lastly, the study's cross-sectional methodology provides a picture of teachers' experiences. This approach ignores teachers' changing attitudes, skills, and practices. Longitudinal research could better explain flexible learning methods and teachers' preparation and confidence.

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Disclosure of Conflict of Interest

The authors assert that they have no conflicts of interest.

Ethics Statement

The present study utilized an internet-based survey technology to gather data from respondents. Participation was completely optional. Prior to their participation, all respondents provided informed consent. Anonymity was guaranteed to respondents, and no personally identifiable information was gathered. Adherence to ethical principles was given top priority throughout the whole research process, including the preservation and disposal of data. For the document preparation, the writers employed generative AI, namely ChatGPT, to improve the sentence structure and increase the overall lucidity of the text. Although the fundamental concepts and research results were obtained via human contributions, the generative AI played a crucial role in enhancing grammar, coherence, and other essential aspects of writing. The integration of human insights with AI support guaranteed a refined and well-organized delivery of the study's findings and conclusions.

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