

Assessing remote learning's feasibility: A comprehensive analysis of Philippine public-school teachers' use of learning management systems and blended learning approaches

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Abstract

This study examines the ever-changing environment of blended learning, with a special emphasis on how teachers in public schools in the Philippines use Google Classroom in the shifting educational landscape. Based on a mix of academic views and practical research, the study seeks to improve our understanding of the difficulties and possibilities related to blended learning. The conceptual framework, derived from Graham et al.'s blended teaching matrix, classifies interactions into four quadrants, offering a complete structure for comprehending blended learning situations. The study aims to identify the blended teaching approaches used by instructors, evaluate the utilization of Google Classroom features and Google Apps for Education, and ascertain the frequency and dependence of Google Classroom as a key teaching tool. Data was gathered from 123 public-school teachers at the Schools Division Office of Isabela through a systematic survey. The results demonstrate a prevalent use of Google Classroom features, highlighting its significance in facilitating the transmission of lessons, communication between students, distribution of assignments, and improvement of learning activities. An examination of the features of Google Classroom, Google Apps for Education, and Google Docs file templates reveals a wide range of use patterns among instructors, ranging from seldom to regular utilization. Teachers demonstrate favorable attitudes towards the adaptability and compatibility of Google Classroom, emphasizing its seamless connection with portable devices. Challenges arise from the sporadic Wi-Fi connections, which have a negative influence on the quality of blended learning. The research suggests implementing customized professional development program for teachers and highlights the need to include adaptive technological frameworks in curriculum design. This study provides essential knowledge on the implementation of blended learning methods by public school teachers. It gives suggestions for policymaking, curriculum design, and teacher training in response to the ever-changing educational environment.

Keywords: Blended learning, Google Classroom, Google apps for education, learning management systems, technology

Introduction

The current technological advancements have significantly reshaped various aspects of contemporary life, particularly revolutionizing educational practices. The integration of mobile devices and internet accessibility has notably influenced educational settings across public spaces, homes, businesses, and academic institutions (König et al., 2020). Legislative initiatives like "Philippine 4.0" underscore the critical need to incorporate digital technologies into the educational sector, signaling a substantial transformation in the educational landscape of the Philippines.

Blended learning, a combination of traditional and digital teaching methods, plays a pivotal role in modern education. Effective implementation of this approach necessitates adept utilization of learning management systems (LMS) and digital tools in physical and virtual classrooms, highlighting the essential role of technology, the internet, and platforms such as Google Classroom in educational methodologies (O'Connor & Andrews, 2015). However, the widespread use of personal devices like cellphones, tablets, and laptops in educational settings has posed challenges, leading to distractions and reduced engagement with instructional materials (Clunie et al., 2017; Tuma, 2021). Remote learning, an integral component of blended learning, involves students

participating in educational activities outside traditional classrooms. Learning management systems such as Google Classroom facilitate remote learning by enabling educators to disseminate information, organize assignments, and foster interactive learning experiences (Romero & Ventura, 2020). Understanding how public-school teachers navigate the complexities of blended learning, particularly their utilization of Google Classroom and other applications, is crucial in adapting to the evolving educational landscape (Li & Ma, 2010).

Educators must carefully consider the advantages and challenges associated with blended learning. Factors influencing faculty attitudes towards technology-rich blended learning, as highlighted by various scholars (Cooper, 2019; McInerney & Druva, 2019), underscore the importance of addressing instructors' varying technological competencies and perceptions to enhance educational outcomes. Moreover, insights from communities of practice can offer valuable perspectives on optimizing blended learning environments (Voogt et al., 2013).

In conclusion, the evolving field of contemporary education necessitates a nuanced understanding of how technology, particularly blended learning approaches like Google Classroom, impacts teaching and learning dynamics. By synthesizing insights from diverse academic viewpoints and empirical research, this study aims to enrich our comprehension of the intricate interplay between technology and education in the modern era.

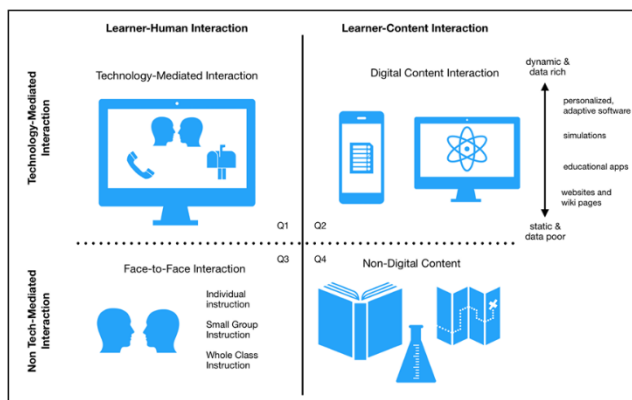
Conceptual framework

This study is based on the Graham et al. (2017) developed blended teaching matrix. The matrix categorizes interactions in blended learning into four quadrants. The quadrants of technology-mediated interaction include online discussions, virtual collaborations, and video conferencing. Digital content interaction involves online modules, multimedia resources, and interactive learning materials. Face-to-face interaction emphasizes traditional classroom discussions and direct instruction. Non-digital content interaction involves non-digital interactions that don't rely on digital technology. It includes activities such as hands-on experiments, field trips, and offline discussions.

Figure 1 provides a visual representation of the blended teaching matrix, illustrating the four quadrants and their corresponding interactions. The matrix serves as a framework for understanding the various modes of interaction in blended learning environments.

Figure 1

Blended Teaching Matrix



Note: Hayati, N., Muthmainah, M., & Wulandari, R. (2022). Children's online cognitive learning through integrated technology and hybrid learning. *JPUD - Jurnal Pendidikan Usia Dini*, 16(1), 116-132. <https://doi.org/10.21009/jpud.161.08>

Graham et al. (2017) defines blended teaching as a combination of skills from different quadrants. In-person teaching involves Q3 (face-to-face interaction) and Q4 (non-digital content) skills, while technology-integrated teaching incorporates Q2 (digital content interaction) and Q3 (face-to-face interaction) skills. Online teaching involves Q1 (technology-mediated interaction) and Q2 (digital content interaction) skills, while blended teaching combines all four quadrants, ensuring a cohesive and balanced learning experience. Blended teaching combines online and face-to-face components for a more effective teaching approach.

Research objectives

The primary purpose of this study was to examine three fundamental research goals:

1. To identify and describe the teachers' blended teaching practices across learning areas.
2. To identify and describe how teachers in public schools use Google Classroom, Google Apps for Education, and Google Docs File Templates.
3. To determine how often and to what degree public-school teachers rely on Google Classroom as their main teaching tool. Additionally, to understand their perceptions on the consequences of using blended learning methods.

Methodology

Research design

The methods used a carefully designed structured survey form using Google Forms as the main tool for collecting data, in accordance with the study's three main goals. The survey was carefully designed to include many aspects of blended teaching methods and the use of digital tools. This study's measuring device was carefully validated for accuracy and reliability. To ensure the tool's ability to measure theoretical constructs, content, construct, and criterion-related validity were carefully examined. The researchers also took steps to ensure the instrument's consistency and stability, proving its reliability in generating correct readings under identical situations. The study's complete validity and reliability strategy strengthens its methodological soundness and credibility of the research results. Prior to deployment, the survey's content followed careful review by subject matter experts and educational researchers to ensure its alignment with study aims and the clarity of its questions. In addition, a pilot test conducted with a select group of educators confirmed the survey's logical and consistent nature, resulting in improvements which increase its dependability in accurately recording replies.

From 123 participants, the survey sought replies to fully satisfy its goals. The study examined teaching methods in many academic fields. Teachers were explicitly asked to explain their methods, activities, and digital technology integration in several subjects. This inclusive approach sought to understand teacher different teaching styles. The survey examined teacher use of Google Classroom, Google Apps for Education, and other internet-based technologies as well as instructional methods. This survey segment examined teacher frequency, causes, and length of usage of various platforms, providing significant data on their prevalence and reasons. The last survey part examined teachers' reliance on Google Classroom as their main teaching tool. It also sought teacher opinions on blended learning's effects. This multimodal study sought to comprehend blended teaching's dynamic environment. The study approach used a verified and trustworthy survey instrument, assuring data reliability. The survey instrument's completeness and specific questions to participants help analyze blended teaching approaches among teachers within the study's scope.

Respondents of the study

The study's sample included 123 participants who were chosen from the teachers working within the Schools Division Office of Isabela. The group in question included a diverse set of teachers, namely Teachers 1-3 and Master Teachers 1-2. The purposeful integration of a diverse group of academic specialists seeks to include comprehensive perspectives on the use of blended learning methodologies in the public school. The study included Teachers 1-3 and Master Teachers 1-2, who represented a wide range of experience levels, instructional approaches, and positions of leadership within the educational system. By using stratified sample, teachers from different levels were included, allowing for a comprehensive understanding of how technology-enhanced teaching methods are used and implemented at varying levels of skill and responsibility within the classroom. This varied sample can provide a more extensive understanding of the challenges, preferences, and approaches linked to using Google Classroom and other digital technologies in the context of blended learning among teachers with distinct roles and experiences.

Findings and Discussion

The findings of this study are presented in tables, which depict the blended teaching practices of public-school teachers across various learning areas. The table includes the application used, the frequency of its use, the standard deviation (*SD*), and the interpretation of the results.

Table 1 provides a comprehensive insight into the frequency of public-school teachers' utilization of Google Classroom features within their blended teaching strategies across various learning domains. The total mean score of 3.52, along with a standard deviation of 0.234, indicates that these educators have adopted Google Classroom functionalities on a widespread basis. Transferring lessons garners a mean of 4.25, indicating its

predominant use "most of the time" to transfer lessons within the teaching framework. Similarly, student electronic messaging registers a mean of 3.75, demonstrating its extensive utilization "most of the time" for student communication. Offering Feedback has a mean of 3.00, signaling its occasional use of "Sometimes" in providing feedback to students. Distributing Assignments showcases a mean of 3.88, implying its widespread integration "most of the time" for assignment dissemination. Lastly, Enhancing Activities displays a mean of 3.63, highlighting its intermittent utilization "Sometimes" to augment learning activities.

The total mean score of 3.52, coupled with qualitative descriptions emphasizing prevalent usage "most of the time" for several key functionalities, underscores the pervasive incorporation of Google Classroom within the diverse blended teaching practices observed across different subject areas among public-school educators.

Table 1

Teachers' Blended Teaching Practices of Across Learning Areas.

Application	Mean	SD	Description
Transferring lesson	4.25	1.389	Most of the time
Student electronic messaging	3.75	1.753	Most of the time
Offering feedback	3.00	1.309	Sometimes
Distributing assignments	3.88	1.808	Most of the time
Enhancing activities	3.63	1.407	Sometimes
Total mean	3.52	0.234	Most of the time

Table 2 shows the usage of Google Classroom features by public school teachers in their blended teaching methods. The most common features are creating an announcement tab for class announcements, posting reminders, organizing writing assignments, giving homework, facilitating class discussions, creating an online forum for queries, and activities with others. These features are used "mostly" for class announcements (4.25 mean), "sometimes" for homework (3.88 mean), and "sometimes" for online chats (3.63 mean). The total mean score of 3.00 reflects the diverse acceptance of these features among teachers, with some being used "most of the time" and others less frequently applied ("sometimes").

Table 2

Frequency of Using Google Classroom Features by Public School Teachers in Blended Teaching

Features	Mean	SD	Description
Using Make a tab for announcements when you're posting lessons.	4.25	1.389	Most of the time
...posting reminders	3.75	1.753	Most of the time
Using Make a tab for assignments in writing tasks.	3.00	1.309	Sometimes
...giving home works	3.88	1.808	Most of the time
... classroom that isn't done	3.63	1.407	Sometimes
Using Make a tab for questions in the online forum	3.05	1.270	Sometimes
Activities with other people	2.59	1.269	Sometimes
Total Mean	3.00	0.285	Sometimes

Table 3 shows the usage of Google Apps for Education among public school teachers in blended learning approaches. The mean score of 2.94 suggests occasional use, with Google Docs being used occasionally. Google Sheets is used sometimes, while Google Forms is frequently used. Slides are rarely used, and Google Translate is rarely used. Google Drive is predominantly used most of the time. The total mean score of 2.94 indicates a diversified adoption pattern among public school teachers, with some apps being used more frequently and others less often. The qualitative descriptions indicate a diversified adoption pattern, with some apps being used more frequently and others less frequently.

Table 3

Frequency of Using Google Apps for Education in Blended-Teaching by Public School Teachers

Google apps for education	Frequency of use	SD	Description
Google Docs	2.88	1.458	Sometimes
Google Sheets	3.13	1.552	Sometimes
Google Forms	3.88	1.458	Most of the time
Google Slides	2.00	1.414	Rarely
Google Translate	2.13	1.458	Rarely
Google Drive	4.13	1.458	Most of the time
Total Mean	2.94	0.046	Sometimes

Table 4 shows that public-school teachers use Google Docs file templates in their blended-learning activities, with a mean value of 1.78 and a low standard deviation of 0.114. The attendance sheet, grade book, quiz, and survey templates are rarely used in these blended teaching methods. The quiz template has a mean of 2.00, while the survey template has a mean of 2.13. The overall low adoption pattern suggests that these specific file templates are infrequently incorporated into public school teachers' mixed teaching practices.

Table 4

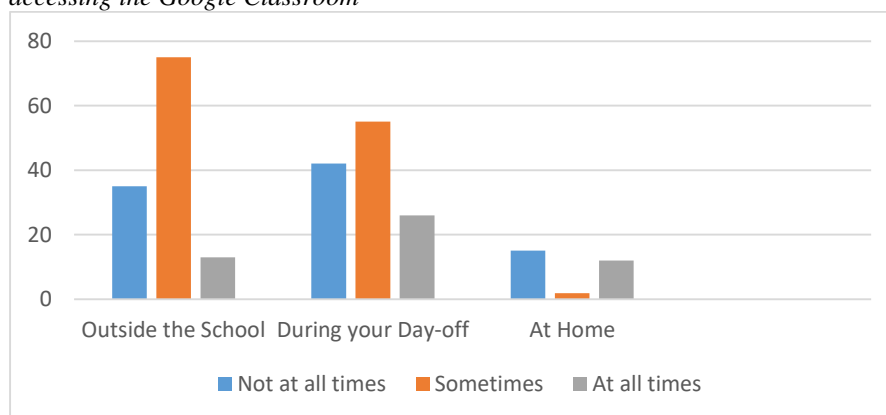
Mean of Using Google Docs File Templates by Public School Teachers

Google Doc file templates	Mean	SD	Description
Attendance sheet (Google Sheet)	1.50	1.414	Rarely
Grade book (Google sheet)	1.50	1.414	Rarely
Quiz (Google Forms)	2.00	1.414	Rarely
Survey (Google forms)	2.13	1.642	Rarely
Total Mean	1.78	0.114	Rarely

Figure 2 presents the mean of public-school teachers' access to Google Classroom, revealing a notable trend of utilization beyond the traditional school environment. Teachers access Google Classroom extensively, not only during official school hours but also during their leisure time, including days off and within their home settings. However, based on the provided information, the specific frequency data detailing the extent or intervals of this access is not explicitly presented in the table.

Figure 2

Mean of accessing the Google Classroom



The findings of this study have important implications for public school teachers and the future of blended teaching using Google Classroom. It is crucial for teachers to continuously update and enhance their skills in utilizing Google Classroom and other related technologies. With the increasing integration of mobile devices in classroom teaching, it is essential for teachers to adapt to these changes and incorporate them into their teaching practices.

Blended teaching goes beyond traditional lecture-style teaching and extends into the realm of learning outside of designated class hours. This highlights the importance of incorporating online and digital components into the learning process, allowing students to engage with course materials and interact with peers beyond the

physical classroom. It is recommended that further studies be conducted to explore and address the challenges and opportunities associated with teaching in this blended-learning environment.

Conclusions and Recommendations

This study significantly contributes to the wider area of education, with implications for teaching policy, curriculum development, and teacher education. The study examines the use of digital resources, namely Google Classroom, in blended learning. This research has broad applicability in early childhood, primary, secondary, and higher education settings. The results highlight the need to implement focused professional development programs to enhance teachers' technology skills in relation to teaching policies. The study suggests implementing modified information and communication technology (ICT) training programs that are in line with the overarching objective of improving teaching practices via policy frameworks. The study's findings may guide the creation and improvement of policies that seek to enhance the integration of technology in educational environments.

The study underlines the shortcomings in the existing use of digital technologies in curriculum creation, emphasizing the need for a more adaptable and student-focused technological framework. The concept for a tailored Learning Management System (LMS) specifically tackles issues linked to the curriculum by promoting the development of captivating and efficient blended learning experiences. This is consistent with the main emphasis on education and instruction, demonstrating the potential influence of technological progress on the development and implementation of educational programs.

Within the field of teacher education, this research highlights the significance of tailored information and communication technology (ICT) training for teachers. This advice is in accordance with the overarching objectives of teacher professional development and the training of educators. The study findings emphasize the need of providing teachers with the essential skills and confidence to successfully use digital resources, in line with the overall objectives of teacher education and development.

The study results have significant effects, such as enhancing teaching methods, optimizing distant and blended learning experiences, and boosting teacher confidence in using digital resources. The research provides useful insights that may enhance the wider discussion on teaching, teacher education, and education policy at different educational levels by addressing these outcomes.

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