



21ST CENTURY PEDAGOGICAL COMPETENCIES AND ACCEPTANCE TO HYBRID LEARNING EDUCATION

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ABSTRACT

This study examined the relationship between 21st-century pedagogical competencies of teachers and their acceptance of hybrid learning in the Division of Davao del Norte. Using a descriptive-correlational research design, data were collected from 222 teachers through validated survey instruments. The study assessed the extent of teachers' competencies in critical thinking, collaboration, communication, and creativity and innovation, as well as their level of hybrid learning acceptance. The findings revealed that both 21st-century pedagogical competencies and hybrid learning acceptance were at an extensive level, indicating that these competencies are frequently demonstrated in teaching practices. Moreover, statistical analyses, including Pearson product-moment correlation and regression analysis, showed a significant relationship between the two variables. All domains of 21st-century pedagogical competencies significantly influenced hybrid learning acceptance, leading to the rejection of the null hypothesis. These results highlight the importance of strengthening teachers' competencies to enhance their adaptability to hybrid learning environments. The study recommends professional development programs that focus on improving these pedagogical skills, ensuring that educators are well-equipped to integrate technology-enhanced teaching strategies effectively. Also, school leaders and policymakers should support initiatives that foster hybrid learning integration in the education system. Future researchers are encouraged to explore additional factors that may influence teachers' acceptance of hybrid learning.

KEYWORDS- 21st-Century Pedagogical Competencies, Hybrid Learning, Teacher Adaptability, Educational Technology, Professional Development

INTRODUCTION

The integration of hybrid learning, combining traditional face-to-face methods with online learning, has been increasingly adopted worldwide to address the evolving needs of education systems. This shift is attributed to both technological advances and a global push toward flexible, student-centered learning environments (Graham, 2020). The recent pandemic further accelerated this transition as schools globally had to adapt to online and hybrid models to ensure continued education amidst lockdowns (Dhawan, 2020). However, the success of hybrid learning largely depends on educators' acceptance and their ability to implement the approach effectively. This acceptance is tied closely to educators' competencies in 21st-century skills, such as critical thinking, collaboration, communication, and creativity, which are fundamental in managing hybrid learning (Hixson et al., 2012; Bervell et al., 2021).

On an international level, educators encounter challenges related to digital literacy, infrastructure, and sometimes resistance to departing from traditional teaching practices. In the United States, for instance, hybrid learning is a cornerstone of educational reform, yet the effectiveness of these programs depends on educators' skill levels in critical thinking and collaboration (Trust & Whalen, 2021). Similarly, Asian countries such as South Korea, Singapore, and Japan are investing in teacher training to bolster these competencies, with government-backed initiatives aimed at enhancing educators' readiness for hybrid learning. For instance, South Korea has successfully improved teachers' digital 2 readiness through structured programs, but there are still obstacles, especially in fostering creativity within curriculum-focused education systems (Kim et al., 2020; Lim et al., 2020).

In the Philippines, hybrid learning has been an essential component of educational reforms, with the Department of Education (DepEd) and the Commission on Higher Education (CHED) actively encouraging its adoption. However, limited access to technology and insufficient training hinders widespread implementation. Many Filipino educators report feeling unprepared and overwhelmed, primarily due to inadequate professional development focused on digital tools and 21st-century skills (Dela Cruz et al., 2022). These gaps underscore the critical need to equip educators with the necessary pedagogical competencies to foster a positive attitude towards hybrid learning and ensure high-quality instruction.

Locally, in the Schools Division of Davao City, similar challenges exist. With a significant focus on improving education quality through hybrid learning, the division has encountered obstacles, including inconsistent access to technology and varying levels of readiness among teachers to adopt blended teaching strategies. The division has been working to provide training programs that enhance teachers' digital literacy and pedagogical skills to better facilitate hybrid learning. However, like other areas, many teachers in Davao City still feel the strain of adapting to new methodologies without sufficient resources or support systems in place, which has highlighted a gap in their professional development (Dela Cruz et al., 2022).



The critical role of 21st-century pedagogical competencies in hybrid learning lies in the ability of educators to create dynamic, effective, and engaging learning environments. Competencies such as critical thinking allow teachers to evaluate and adapt content thoughtfully, while collaboration promotes teamwork within and outside the classroom. Communication skills are essential in digital environments for maintaining clarity and engagement, and creativity allows teachers to design innovative performance expectancy that cater to diverse learning needs (Greenstein, 2021; Sheninger, 2020). These competencies not only influence educators' effectiveness but also shape their willingness to adopt hybrid learning approaches.

Educators' acceptance of hybrid learning is impacted by their expectations of its usefulness, the ease with which they can integrate it into their teaching, and their overall attitude toward technology (Bervell et al., 2021). Without robust pedagogical skills, educators may struggle to see the benefits of hybrid learning, which can lead to resistance. This study, therefore, aims to explore the relationship between 21st-century competencies and educators' acceptance of hybrid learning, providing insights into how professional development, curriculum adjustments, and policy changes can support educators in Davao City and beyond. By identifying which competencies most significantly impact hybrid learning acceptance, the research can inform future training priorities, equipping educators to adapt to evolving educational models and deliver high-quality, engaging education for all students.

The research gap in this study is centered on the limited understanding of how specific 21st-century pedagogical competencies influence educators' acceptance and effective implementation of hybrid learning, especially in the context of the Philippines, and more specifically within the Schools Division of Davao City.

Studies have highlighted the importance of competencies such as critical thinking, communication, and creativity in facilitating successful hybrid learning environments (Graham, 2020; Hixson et al., 2012). However, there is a lack of research examining the direct relationship between these competencies and hybrid learning acceptance in specific cultural and resource-limited contexts. Most existing studies tend to focus on the technological aspects of hybrid learning adoption, often overlooking the crucial role of pedagogical skills and educator readiness in determining its success (Trust & Whalen, 2021; Hodges et al., 2020).

While the Department of Education has promoted hybrid learning, research suggests that many educators feel unprepared to implement this model due to gaps in training and support (Dela Cruz et al., 2022). Specifically, studies have not yet fully explored how enhancing pedagogical competencies can improve Filipino educators' attitudes towards and adoption of hybrid learning, leaving a critical gap in developing targeted interventions.

Locally, within the Schools Division of Davao City, the adoption of hybrid learning has been met with varying levels of readiness and success, indicating a need to understand better which competencies are most essential for educators in this region. This study seeks to address this gap by investigating the extent to which 21st-century competencies influence educators' acceptance of hybrid learning, with the goal of informing professional development programs and policies tailored to the unique challenges faced by educators in Davao City. By focusing on this gap, the research aims to contribute insights that can guide educational leaders in the Philippines and similar contexts in effectively supporting educators in hybrid learning implementation.

LITERATURE REVIEW

A key challenge in developing 21st-century pedagogical competencies lies in balancing the integration of both disciplinary and interdisciplinary teaching methods. The OECD (2023) emphasizes that while these competencies are inherently interdisciplinary, their application requires a foundational knowledge specific to each domain. For instance, critical thinking and creativity are influenced by the context in which they are applied, necessitating an understanding of both domain-general and domain-specific components. This dual nature of competencies underscores the need for curricula that not only teach content knowledge but also cultivate the procedural knowledge required to apply such competencies effectively (Pellegrino & Hilton, 2022).

Furthermore, effective pedagogy for the 21st century requires student-centered learning methods such as problem-based and project-based learning. These approaches empower students to engage with real-world problems in meaningful ways, encouraging them to research, evaluate information, and construct knowledge actively rather than passively absorbing it. Such participatory learning strategies enable students to connect various content areas and develop critical and creative thinking, problem-solving, and collaborative skills (Paniagua & Istance, 2020). However, this pedagogical shift demands additional effort from educators, who must create engaging lesson plans and manage interactive classrooms. It also requires systemic support, such as professional development for teachers and the flexibility to integrate curricula in contextually relevant ways.

Challenges in the assessment of 21st-century competencies further complicate their integration into teaching. Current assessment practices often fall short in measuring these competencies, as they tend to focus on knowledge reproduction rather than the complex, multi-component nature of these skills. For example, while traditional assessments like multiple-choice questions can effectively gauge factual knowledge, they struggle to capture the cognitive and behavioral processes that define competencies such as problem-solving, collaboration, and self-regulation (Care et al., 2023). This gap highlights the need for innovative assessment designs that can generate evidence of students' higher-order thinking and behaviors, providing a more authentic reflection of their abilities in real-life contexts (Lai & Viering, 2022).



Moreover, the assessment of 21st-century competencies is further complicated by their interconnected nature and the challenge of defining and measuring distinct constructs. For instance, competencies like problem-solving involve various cognitive, metacognitive, and affective processes, making it difficult to isolate and assess specific skills independently. Effective assessments should use open-ended, interactive tasks that mirror authentic situations, allowing students to engage fully in the problem-solving process and demonstrate their thinking and decision-making behaviors (Ercikan & Oliveri, 2019). Technology-enhanced assessments offer new opportunities to create such interactive environments, though their development requires significant time and resources.

To address these pedagogical and assessment challenges, educational systems must adopt a holistic approach that aligns curriculum, teaching, and assessment strategies with the demands of the 21st century. This includes defining clear learning progressions that support the integration of competencies at appropriate stages of education, providing teachers with the necessary training and resources, and investing in assessment methods that capture the complexity of these skills. By doing so, educators can better equip students with the knowledge, skills, and attitudes needed to navigate the complexities of the modern world (Darling-Hammond et al., 2019; Learning Policy Institute and Turnaround for Children, 2023).

Statement of the Problem

This study determined the relationship between 21st-century pedagogical competencies and educators' hybrid learning acceptance. More specifically, it sought to answer the following questions:

1. What is the extent of 21st-century pedagogical competencies in terms of:
 - 1.1. Critical Thinking
 - 1.2. Collaboration
 - 1.3. Communication
 - 1.4. Creativity And Innovation
2. What is the extent of educators' hybrid learning acceptance in terms of:
 - 2.1. Performance Expectancy
 - 2.2. Effort Expectancy
 - 2.3. Social Influence
 - 2.4. Attitude
 - 2.5. Experience With Technology for Teaching and Learning
 - 2.6. Use Behavior
 - 2.7. Behavioral Intention
3. Is there a significant relationship between 21st-century pedagogical competencies and educator's hybrid learning acceptance?
4. Which of the domains of 21st-century pedagogical competencies significantly influence the educator's hybrid learning acceptance?

METHODOLOGY

Research Design

The research design of this study is a descriptive correlational approach within a quantitative framework, aiming to explore the relationship between 21st-century pedagogical competencies (such as critical thinking, collaboration, communication, and creativity) and educators' acceptance of hybrid learning (measured through factors like performance expectancy, effort expectancy, social influence, and behavioral intention). This design is suitable for assessing how these variables correlate in a natural setting without experimental manipulation, providing an objective overview of the relationship's strength and nature (Creswell & Creswell, 2018; Field, 2018)

The descriptive correlational design serves two primary purposes here: first, it captures detailed descriptions of the levels of 21st-century pedagogical competencies and hybrid learning acceptance; second, it analyzes the associations between these variables. Descriptive research enables the study to document conditions as they exist, which is crucial for understanding the real-world context of hybrid learning implementation. The correlational aspect assesses how closely changes in one variable are related to changes in another, helping to identify predictive relationships (McMillan & Schumacher, 2014; Babbie, 2021). By using this approach, the study can highlight factors that potentially facilitate or hinder hybrid learning adoption among educators, particularly among Grades 4-6 teachers.

Research Respondents

The respondents in this study consist of educators within the division of Davao City. To ensure a representative sample, Slovin's formula was used to determine the required sample size. With an estimated population of approximately 500 teachers, the formula yielded a sample size of 222 educators based on a 5% margin of error, ensuring both precision and statistical reliability in the findings.

The choice of educators as respondents is crucial for understanding how 21st-century pedagogical competencies, such as critical thinking, communication, collaboration, and creativity, influence hybrid learning acceptance. These educators are uniquely positioned to provide insights into how these competencies shape their teaching practices,



acceptance of digital tools, and the overall impact of hybrid learning on student engagement and learning outcomes (Boelens et al., 2018; Bond et al., 2021).

This sample also reflects a broad range of experience levels and technological proficiency among teachers, allowing the study to capture diverse perspectives. By targeting educators who are immersed in hybrid learning, the research can better understand the readiness of teachers to integrate new learning methodologies, the challenges they face, and the factors that promote or hinder hybrid learning adoption (Trust & Whalen, 2020). Insights from this study will be valuable for policymakers, educational leaders, and school administrators aiming to strengthen hybrid learning frameworks and equip teachers with the competencies needed for successful implementation (Kurt, 2022).

The inclusion criteria for respondents focus on Grades 4-6 teachers within Davao City division, as these educators play a pivotal role in foundational education and digital integration at a stage critical for student development. This emphasis aligns with research showing that teacher preparation and support are essential for overcoming the barriers to hybrid learning adoption (Yong & Gates, 2014; Graham et al., 2019).

Research Instrument

The primary instrument for data collection was a structured questionnaire designed to measure both, 21st century pedagogical competencies of teachers and educators' hybrid learning acceptance. The questionnaire consisted of closed-ended questions with Likert-scale items to quantify perceptions and experiences.

For data collection, this study utilized an adapted survey questionnaire. The questionnaire that was employed in this undertaking was divided into two sets. The first set focused on the extent of 21st-century pedagogical competencies. The second set focused on the extent of educators' hybrid learning acceptance.

Data Analysis

The study employed several statistical tools to analyze the data collected and address each research question comprehensively. The statistical methods selected ensure that the data is appropriately evaluated to derive meaningful conclusions. Here's a breakdown of the statistical tools used for each aspect of the study:

Mean. To assess the extent of 21st-century pedagogical competencies and educators' hybrid learning acceptance. This will be used to analyze data for questions 1 and 2. This provides a summary of the data and highlights the average levels and variations in competencies and acceptance indicators.

Pearson Product-Moment Correlation Coefficient (Pearson r). To determine the relationship between 21st-century pedagogical competencies and educators' hybrid learning acceptance. This tool will be used to address research question 3, which investigates whether a significant relationship exists between the competencies and acceptance levels.

Multiple Regression Analysis: Purpose: To identify which domains of 21st-century pedagogical competencies significantly influence educators' hybrid learning acceptance. For research question 4, multiple regression will be employed to determine the predictive power of each competency domain on hybrid learning acceptance.

RESULTS AND DISCUSSION

The main focus of the study was to determine the significance of the relationship between 21st century pedagogical competencies of teachers and hybrid learning acceptance. The study was conducted with the selected teachers from the Division of Davao del Norte. There were two hundred twenty two (222) teachers who participated in this study. A descriptive correlational method of research was used in utilizing adopted research instruments. The said instruments were validated by the panel of experts and subjected to pilot testing before it was made ready for administration. Weighted mean, Pearson product moment correlation, and regression analysis were statistical tools used in analyzing the data. The hypotheses in this study were tested at a 0.05 level of significance.

The major findings of the study were the following: the extent of the 21st century pedagogical competencies of teachers is extensive. Meanwhile, the extent of the hybrid learning acceptance of the teachers is also extensive. It was found that there is a significant relationship between 21st century pedagogical competencies of teachers and the hybrid learning acceptance of teachers. The hypotheses of no significant relationship between 21st century pedagogical 107 competencies of teachers and hybrid learning acceptance of teachers and none of the domains of 21st century pedagogical competencies of teachers significantly influence the hybrid learning acceptance of teachers were rejected.

Conclusions

Based on the findings of this study, the following conclusions were offered: The extent of 21st century pedagogical competencies of teachers is extensive, which implies that it is oftentimes evident. All dimension of 21st century pedagogical competencies of teachers which includes critical thinking, collaboration, communication and creativity and innovation, are at an extensive level, which means it is oftentimes evident. Meanwhile, the extent of hybrid learning acceptance is also extensive, which means that it is oftentimes evident. All dimensions of hybrid learning acceptance are oftentimes evident. Both variables call for all school members to work hand in hand to strengthen the existing status of the 21st century pedagogical competencies of teachers and hybrid learning acceptance of teachers



Based on the findings, 21st century pedagogical competencies of teachers, and hybrid learning acceptance are correlated. Also, 21st century pedagogical competencies of teachers significantly influences hybrid learning acceptance. All domains of 21st century pedagogical competencies of teachers, namely, critical thinking, collaboration, communication, and creativity and innovation, significantly influence hybrid learning acceptance by registering a p-value of .000 which is less than .05 in the level of significance. This leads to the rejection of the null 108 hypotheses. Further, the result indicates that for every unit increase in the four domains of the 21st century pedagogical competencies of teachers, their hybrid learning acceptance also increases.

Recommendations

The findings of this study emphasize the significant relationship between 21st century pedagogical competencies and hybrid learning acceptance among teachers. Given that all four domains, critical thinking, collaboration, communication, and creativity and innovation, positively influence teachers' willingness and ability to integrate hybrid learning, it is essential to reinforce these competencies through targeted interventions. The following recommendations are addressed to key stakeholders in the education sector to ensure that hybrid learning implementation is both effective and sustainable.

For higher officials in the Department of Education, it is recommended that policies and programs be developed to institutionalize professional development initiatives that enhance teachers' 21st-century pedagogical competencies. Since the study confirms that these competencies significantly influence hybrid learning acceptance, training programs should focus on fostering critical thinking, collaboration, communication, and creativity and innovation in teaching practices. Additionally, it is essential to provide continuous support in the form of workshops, mentoring programs, and technology integration training to help teachers seamlessly transition to hybrid learning environments. Further, the Department of Education should ensure the provision of adequate digital infrastructure, internet 109 connectivity, and resources to facilitate effective hybrid learning across schools, particularly in underserved areas.

For school principals, it is imperative to create a school culture that supports and encourages the continuous development of 21st-century pedagogical competencies among teachers. Since the study found that teachers' acceptance of hybrid learning is strongly linked to their competencies, school leaders should provide opportunities for collaborative learning, peer mentoring, and regular professional development sessions that align with 21st-century teaching practices. Moreover, principals should actively support the integration of technology in classroom instruction by equipping teachers with the necessary digital tools and promoting the use of blended and hybrid learning models in lesson delivery. Encouraging a culture of innovation and critical thinking within the school community will also foster a more dynamic learning environment for both teachers and students.

For teachers, the study highlights the importance of continuously developing and refining their 21st-century pedagogical competencies to enhance their ability to accept and implement hybrid learning. Teachers should actively engage in professional learning communities, seek opportunities for training, and collaborate with peers to exchange best practices in hybrid instruction. Since critical thinking, collaboration, communication, and creativity and innovation are key determinants of hybrid learning acceptance, teachers should integrate these skills into their teaching methodologies to improve student engagement and learning outcomes. Additionally, embracing new educational technologies and 110 digital tools will further enhance the hybrid learning experience, making instruction more interactive and student-centered.

For future researchers, this study provides a strong foundation for further exploration of the relationship between pedagogical competencies and hybrid learning acceptance. Future research could focus on longitudinal studies to examine how continuous professional development in these competencies affects long-term hybrid learning adoption among teachers. Moreover, studies exploring how these competencies influence student learning outcomes in hybrid settings would offer valuable insights into improving educational effectiveness. Expanding the study to different educational contexts, including elementary and higher education institutions, could provide a more comprehensive understanding of the impact of 21st-century teaching skills on various learning modalities.

This study underscores the critical role of teachers' pedagogical competencies in the effective adoption of hybrid learning. Strengthening these competencies through sustained professional development, institutional support, and policy initiatives will not only enhance hybrid learning implementation but also contribute to the overall improvement of the Philippine education system in the 21st century.

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