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ICT Integration in UBLES Education: Teachers' Perceptions on Classroom Engagement

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A B S T R A C T

This study investigates the perceptions of teachers at the University of Baguio Laboratory Elementary School (UBLES) regarding the integration of Information and Communication Technology (ICT) tools in the classroom. Using qualitative data collected from semi-structured interviews with six teachers actively involved in ICT-integrated teaching, the study highlights both the benefits and challenges of ICT in the learning process. The findings reveal that while ICT significantly enhances student engagement, particularly through interactive digital tools such as videos and simulations, its effective implementation is hindered by technical and infrastructural barriers, such as unreliable internet connectivity and a lack of devices. Teachers also noted the importance of professional development in digital pedagogy, as many reported a gap in their training to effectively integrate ICT into lessons. The study concludes by offering recommendations for improving ICT integration, including infrastructure upgrades, targeted teacher training, and the creation of a peer-support system to foster collaborative learning and resource-sharing among educators. These findings are significant in the context of Philippine elementary education, particularly in laboratory schools like UBLES, which serve as models for educational innovation.

INTRODUCTION

The integration of Information and Communication Technology (ICT) in education has become a cornerstone of 21st-century teaching and learning practices. As educational environments worldwide evolve with digital tools and platforms, ICT has proven to be a powerful tool in enhancing student engagement, fostering collaboration, and improving academic performance. In the Philippines, the Department of Education (DepEd) has launched various initiatives aimed at embedding technology into classroom instruction. Programs like the DepEd Computerization Program, the Learning Management System (LMS), and other digital innovation projects have made efforts to bridge the digital divide and empower students and teachers to thrive in a technology-driven world.

However, despite the potential of ICT, the actual implementation of these technologies faces several challenges, including inadequate infrastructure, inconsistent access to devices, and the varying levels of digital literacy among educators. The University of Baguio Laboratory Elementary School (UBLES), as a private laboratory school, offers an opportunity to explore ICT integration within a controlled, experimental setting. UBLES has consistently been at the forefront of implementing innovative teaching methods, and ICT plays a key role in its instructional approach.

This study seeks to investigate how ICT tools are integrated into teaching practices at UBLES, particularly in intermediate grades (Grades 4 to 6), and how teachers perceive the impact of these tools on student engagement and academic performance. By focusing on teacher perceptions, this study aims to provide insights into the practical challenges and benefits of ICT in primary education. Furthermore, the study explores the implications of these findings for improving ICT integration strategies and supporting teachers' professional development in the digital age.

Through this research, we aim to contribute to the ongoing discourse on educational technology in the Philippines, particularly in the context of primary education. The findings will help inform strategies to enhance the use of ICT in the classroom, ensuring that both teachers and students can maximize the potential of digital tools for learning.

THEORETICAL REVIEW

The integration of Information and Communication Technology (ICT) in education has been widely studied, with numerous studies demonstrating its positive impact on student engagement, motivation, and learning outcomes. In the context of primary education, ICT tools—such as interactive platforms, educational apps, multimedia content, and digital games—have been shown to enhance students' ability to visualize abstract concepts, participate actively in lessons, and collaborate with their peers. A study by Alvarez (2020) emphasizes that ICT can significantly improve digital literacy, which is crucial for students' success in the modern world. These tools provide dynamic learning experiences that go beyond traditional textbook learning, promoting creativity, problem-solving, and critical thinking.

In the Philippines, ICT integration has been a priority for the Department of Education (DepEd) through initiatives such as the DepEd Computerization Program and the development of Learning Management Systems (LMS) to support the digital transformation of classrooms. However, the actual use of ICT in Filipino classrooms is still hindered by several challenges, including inconsistent access to reliable internet, insufficient devices for students, and the need for enhanced teacher preparedness (DepEd, 2020). A study by Villanueva et al. (2023) underscores the infrastructural gaps that hinder ICT implementation, particularly in rural and underserved areas of the country. These barriers often create inequities in how students experience technology in their classrooms, leading to a disparity in educational opportunities.

While much research has been conducted on ICT's effectiveness in higher education and secondary schools, there is a relative lack of studies focusing on the primary education level, especially in private laboratory schools like UBLES. The research conducted by Magtoltol (2025) highlighted that ICT's impact on younger learners, particularly in terms of engagement and performance, has not been sufficiently explored. This gap presents an opportunity for further investigation into how ICT tools influence the learning experiences of primary students, particularly in a controlled environment where educational innovation is actively encouraged.

Recent studies have also pointed to the importance of teacher readiness in ICT integration. Nguyen & Tran (2021) noted that many teachers face difficulties in incorporating ICT into their lessons due to a lack of adequate training in digital pedagogy. This is echoed by Kim & Lee (2022), who observed that the integration of ICT is often dependent on the teachers' comfort with technology and their ability to adapt their teaching methods to incorporate digital tools effectively. As ICT integration continues to grow, professional development must evolve to support teachers in developing the necessary skills to integrate digital tools effectively in their classrooms.

Furthermore, the success of ICT integration in classrooms is often linked to the pedagogical approach used. As Zurita & Nussbaum (2004) demonstrated, ICT can enhance learning through collaborative and interactive methods, where students engage with peers and technology in a dynamic, hands-on manner. Clark & Mayer (2016) also emphasized the effectiveness of multimedia learning environments, suggesting that well-designed digital tools can significantly enhance comprehension and retention by engaging multiple cognitive channels. These studies suggest that ICT, when used thoughtfully and purposefully, can transform how students learn and interact with educational content.

Theoretical and Conceptual Framework

This study is grounded in two key learning theories that offer complementary perspectives on how ICT integration enhances student engagement and contributes to learning performance in the elementary education setting.

Social Cognitive Theory (SCT)

Albert Bandura's Social Cognitive Theory emphasizes the continuous interaction between personal factors, behavioral processes, and environmental influences, known as reciprocal determinism. Within this framework, observational learning is central. Students learn not only through direct instruction but also by observing how teachers model the use of technology and how peers interact with digital tools. When learners witness effective digital interactions, they internalize skills such as responsible technology use, collaboration through platforms, and digital creativity.

Constructivism

Jean Piaget's Constructivist Theory provides another essential lens through which ICT-enhanced learning can be understood. Constructivism posits that learners actively build their knowledge through meaningful interactions and hands-on experiences. Digital learning platforms, multimedia content, and interactive tools allow students to explore concepts, manipulate information, and receive immediate feedback — experiences that support the development of deeper and personalized learning.

In ICT-enabled classrooms, students construct knowledge by engaging with digital simulations, participating in collaborative platforms, and applying learned concepts in real-time problem-solving tasks. Technology serves as both a medium and catalyst for cognitive development, enabling learners to reflect, revise, and refine their understanding continuously. As students encounter diverse digital tasks and learning environments, they adapt their strategies and develop critical thinking and autonomy, aligning with constructivist principles of experiential and reflective learning.

Significance of the Study

This study holds significant value for multiple stakeholders within the educational system, particularly in the context of technology-enhanced instruction in Philippine basic education. By examining the perceptions of teachers and students at UBLES regarding ICT integration, the research generates actionable insights that can inform the design of more effective, inclusive, and engaging digital learning environments. The findings will help strengthen ICT-enabled teaching practices by identifying both successful strategies and persistent challenges in classroom implementation. Ultimately, this study supports the development of learner-centered, digitally enriched instruction that fosters student engagement, improves academic performance, and advances institutional goals for innovative and future-ready education.

School Administrators: The findings of this study will provide school leaders with evidence-based insights to guide the enhancement of ICT integration across instructional settings. By identifying specific strengths, gaps, and challenges in current practices, administrators can formulate strategic plans that optimize digital infrastructure, allocate resources more effectively, and implement targeted support programs. These improvements will help ensure that technology-driven initiatives are sustainable, responsive to teacher and student needs, and aligned with institutional goals for academic excellence.

Ultimately, the study supports administrators in fostering a more engaging, equitable, and future-ready learning environment at UBLES.

Teacher Educators: This study will enrich teachers' understanding of how ICT integration directly influences student engagement, motivation, and academic achievement in the intermediate grades. By highlighting effective practices and common challenges, the findings will empower educators to make informed decisions when selecting digital tools, designing learner-centered activities, and refining instructional strategies. Furthermore, increased awareness of implementation barriers may inspire teachers to pursue ongoing professional development, collaborate with peers, and adopt evidence-based approaches that enhance the quality and impact of technology-enabled instruction.

Students: The results of this research will underscore how ICT integration enhances student engagement, motivation, and academic growth by creating dynamic and interactive learning experiences. Through the use of digital tools, students are empowered to explore content more deeply, collaborate with peers, and receive timely feedback that supports their learning journey. The insights gained from this study can guide schools in designing learner-centered environments that cultivate digital literacy, encourage active participation, and promote meaningful academic achievement among elementary learners. Ultimately, ICT serves not only as a medium for instruction but as a catalyst for developing confident, curious, and future-ready students.

Objectives of the Study

This study aims to explore the integration of Information and Communication Technology (ICT) in classroom instruction at the University of Baguio Laboratory Elementary School (UBLES), with focus on teacher perceptions of student engagement. Specifically, it seeks to:

1. Examine teacher perceptions of how ICT integration influences student engagement, motivation, and participation in classroom learning activities
2. Identify the challenges and opportunities teachers encounter in integrating ICT tools in teaching English, Mathematics, and Science in Grades 4 to 6.

METHODOLOGY

Research Design

The study employed a qualitative descriptive research design, which was considered the most suitable approach for exploring teacher perceptions and experiences with the integration of ICT tools in elementary education. This design allowed for a comprehensive examination of teachers' subjective experiences, capturing both the challenges and opportunities they encounter while using ICT to enhance student engagement and meet performance standards. By focusing on qualitative data, the study gained in-depth insights into the ways ICT tools influence teaching practices and student participation, going beyond mere numerical analysis to uncover nuanced aspects of ICT's impact on the classroom. This approach enabled a richer understanding of the

complexities involved in ICT integration, particularly in relation to the varying levels of teacher preparedness, technological barriers, and the overall effectiveness of ICT tools in fostering academic achievement.

Sampling Technique

Purposive sampling was employed to select teachers who are actively involved in ICT-integrated teaching. The teachers' use of ICT tools in the delivery of core subjects (English, Math, Science) made them ideal participants for the study.

Data Collection

Saturation was achieved through semi-structured interviews with six purposively selected teachers who have direct experience incorporating ICT into their teaching practices. As the interviews progressed, repetitive patterns and themes emerged in the responses, signaling that no new significant information was being introduced. This consistency in the data indicated that further interviews would not yield substantially different insights, thereby confirming that the sample size was sufficient for the study's objectives.

After reaching saturation, the data were analyzed thematically to identify key themes related to the challenges and opportunities of ICT integration, as well as its effects on student engagement and academic performance.

Data Analysis

Thematic analysis was used to analyze the data. The six-phase framework by Braun and Clarke (2006) was followed to identify and categorize recurring themes related to ICT's impact on student engagement, motivation, and performance.

RESULTS AND DISCUSSION

Influence of ICT Integration on Student Engagement, Motivation, and Participation

Teachers generally perceive ICT as a strategic tool for enriching the educational experience of intermediate learners. Several themes emerged regarding how technology influences classroom dynamics:

1. Enhanced Visualization and Comprehension of Abstract Concepts: Digital tools like videos, animations, and simulations are considered vital for clarifying complex topics. Teacher 3 and Teacher 4 specifically noted that these resources help students grasp abstract concepts in Science, such as the water cycle and states of matter. Teacher 6 added that these tools help learners understand abstract ideas more concretely, even when facing technical lags. Villanueva et al. (2023) corroborate this, noting that digital platforms aid in visualizing complex ideas, particularly in subjects like Science, making them more accessible to young learners.
2. Increased Motivation and Enjoyment: Technology makes lessons more interactive and fun, which naturally boosts student motivation. Teacher 1 highlighted the use of simple touchscreen apps and storytelling videos to introduce foundational concepts in an engaging way. Teacher 2 and

Teacher 3 observed that these tools motivate students to participate more actively in the learning process. According to Kim & Lee (2022), such interactive tools not only increase student motivation but also foster a more enjoyable learning environment.

3. Confidence Through Instant Feedback: Interactive platforms provide immediate results, which encourages participation. Teacher 6 observed that using interactive tools for Mathematics problem-solving boosted students' confidence and willingness to participate because they could check their solutions instantly. Magtoltol (2025) supports this by highlighting how immediate feedback from ICT-based learning tools enhances students' self-efficacy, making them more willing to engage in academic tasks.
4. Active vs. Passive Participation: While ICT captures attention, it can sometimes lead to passivity. Teacher 4 noted that students might become 'passive viewers' if lessons rely too heavily on videos without being paired with hands-on activities. Alvarez (2020) cautions that while ICT has potential for engagement, it must be used thoughtfully to avoid turning students into passive recipients of content.

Challenges in Integrating ICT Tools

Despite the positive perceptions, teachers encounter significant obstacles that disrupt the flow of instruction and affect learning outcomes:

1. Infrastructural and Technical Barriers: The most common challenges are unstable internet connections and limited access to devices. Teacher 3 specifically mentioned that technical issues and a lack of computers for all students often interrupt the flow of the lesson. Villanueva et al. (2023) highlight that such infrastructural gaps are prevalent across Philippine schools, particularly in rural areas, and hinder the effective implementation of ICT.
2. Student Distraction and Overstimulation: ICT can lead to a shift in focus from the lesson to the tool itself. Teacher 6 reported that students often get distracted by changing avatars or emojis rather than answering activities. Teacher 1 and Teacher 4 cautioned that fast-paced digital tools can be overstimulating, leading to excitement that is difficult to manage or a focus on background music and colors rather than actual content. This concern is echoed by Nguyen & Tran (2021), who found that overuse of ICT tools in the classroom often leads to disengagement rather than enhanced participation.
3. Teacher Readiness and Time Constraints: There is a perceived lack of specialized training for effective digital pedagogy. Teacher 5 and Teacher 6 emphasized that preparing ICT-based lessons takes longer than traditional methods and requires extra time to guide students with lower digital literacy through basic navigation. Kim & Lee (2022) affirm that teachers' readiness to integrate ICT is often limited, and they require more professional development to use technology effectively in the classroom.

Opportunities and Strategies for Improvement

The study identified several opportunities to strengthen ICT integration at UBLES:

1. Pedagogical Shifts: Teachers see ICT as an opportunity for personalized and collaborative learning. Teacher 6 noted that ICT allows various teaching strategies that suit diverse learning styles. Zurita & Nussbaum (2021) emphasize that ICT can facilitate collaborative learning, where students not only interact with content but also collaborate with their peers, fostering deeper learning.
2. Need for Contextualized Training: Respondents emphasized the need for hands-on, classroom-based workshops. Teacher 4 suggested training should focus on pedagogical strategies like inquiry-based learning rather than just technical skills. Teacher 6 advocated for a peer-support system where teachers can share ICT strategies and best practices to build collective confidence. Alvarez (2020) supports the idea that training should focus on pedagogical strategies that integrate ICT into meaningful learning experiences, rather than merely teaching the technicalities of digital tools.
3. The findings align with Social Cognitive Theory and Constructivism, where students learn by observing digital modeling and active participation. However, as noted by Teacher 1, it is critical to balance screen time with 'hands-on, sensory activities' to ensure technology remains a catalyst for cognitive development rather than a source of distraction. The results suggest that for UBLES to maximize the impact of ICT, institutional support must go beyond providing hardware to include stable connectivity and practical, subject-specific professional development.

CONCLUSIONS AND RECOMMENDATIONS

ICT integration at UBLES has a positive impact on student engagement, particularly through interactive and multimedia tools. However, significant challenges, including technical issues and the potential for student distraction, hinder the full potential of ICT in the classroom. To maximize the benefits of ICT, the study recommends improvements in infrastructure, teacher training, and the adoption of balanced instructional approaches.

Recommendations

Based on the findings, the following recommendations are proposed:

1. Infrastructure Improvements: UBLES should prioritize ensuring stable internet connections and increasing the availability of devices for all students.
2. Pedagogical Training: Professional development programs should focus on teaching strategies for ICT integration, including inquiry-based learning and differentiated instruction.
3. Peer-Support System: Establish a peer-mentorship system where teachers can share ICT strategies and resources, fostering a collaborative approach to ICT integration.

4. Balanced Instruction: Teachers should balance digital learning with hands-on activities to maintain student engagement and ensure deep learning.

FURTHER STUDY

This study will serve as a valuable reference for future investigations into ICT integration, student engagement, and academic performance in elementary education. By providing localized insights from a private laboratory school context, it contributes to the growing body of knowledge on technology-enhanced instruction in Philippine basic education. The findings may inspire further exploration of emerging digital tools, innovative pedagogical approaches, and systemic challenges related to infrastructure, equity, and teacher readiness. Additionally, this research opens pathways for comparative studies, longitudinal analyses, and interdisciplinary inquiries that deepen understanding of ICT's evolving role in shaping meaningful and inclusive learning experiences.

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