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Impact Of Teachers' Digital Literacy On Gamification Implementation In Teaching Elementary Grade Level In Cabiao, Nueva Ecija

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Abstract

This study investigated the relationship between teachers' digital literacy skills and the implementation of gamification strategies in elementary education within Cabiao, Nueva Ecija. Employing a descriptive-quantitative research design, 92 teachers from four public elementary schools participated via purposive sampling. A validated self-made questionnaire measured teachers' digital literacy, their frequency of gamification use, and perceptions of the connection between these factors.

Findings revealed that teachers were highly digitally literate, particularly in communication, information evaluation, and instructional application, though challenges were noted in creating interactive content and utilizing advanced tools. Teachers' agreement on the influence of digital literacy on gamification implementation had an overall weighted mean of 4.27 ("Strongly Agree"), while agreement on the use of gamification teaching strategies had a weighted mean of 3.96 ("Agree"). Pearson correlation indicated a significant moderate positive relationship between digital literacy and gamification use ($r = 0.522$, $p < .001$). Results underscore the crucial role of digital competence in successfully applying gamification, suggesting that sustained professional development is vital to enhance both digital skills and innovative pedagogy.

Article Info

Keywords:
Polytechnic University of the Philippines–Cabiao Campus, Bachelor in Elementary Education, Teachers' Digital Literacy, Gamification, Teaching Strategies

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INTRODUCTION

In the digital era, teaching strategies are rapidly evolving to incorporate technology-driven methods that promote active and meaningful learning. Among these, gamification—the integration of game-like elements such as points, badges, leaderboards, and challenges—has emerged as a promising approach to increasing student motivation and engagement. The success of gamification by teachers however is highly reliant on their digital literacy which is their ability to use digital tools and applications to teach.

Digital literacy is not a mere computer literacy. It also involves being responsible in the use of information, critical in the evaluation of sources and the inclusion of digital tools in the teaching process in an innovative way. The impact of disparities in the digital skills of teachers can influence the effectiveness of the implementation of gamified learning in schools in Cabiao, Nueva Ecija as more of them move to this approach.

This research paper examines the relationship between digital literacy and the classroom application of gamification by teachers. It would like to provide valuable content to guide training, and to enhance technology-based education.

LITERATURE REVIEW

Digital literacy and gamification are regarded as effective in terms of making learning more interesting, effective, and assisting educators in experimenting with new pedagogical techniques. Digital literacy does not only imply the ability to operate a computer, but also involves checking and creating digital work in a practical manner.

According to Redecker (2017), digital literacy is not just a computer literacy aspect. Decker modified the European Framework on the Digital Competence of Educators (DigCompEdu) to provide teachers with easy, occupation specific actions on developing in this field. The 2014 ICT Competency Framework of UNESCO identifies six aspects in teachers, including teaching methods, curriculum and testing, vision and policy, using ICT, running schools, and teacher growth. These guides indicate that the technology-enabled learning requires good technical skills, good teaching skills, reflection, and collaboration.

A study by Ertmer and Ottenbreit -Leftwich (2015) demonstrates that good teachers who can work with digital tools can increase interest and learning among students to a considerable degree. Cabero-Almenara and Barroso-Osuna (2015) suggested implementing technology in daily activities, such as transforming the online learning environment and selecting online resources. According to Gisbert and Lazaro (2015), this requires that teachers continue to think, collaborate and to continue training in order to make this effective. There are still issues despite developments. Scherer et al. (2019) discovered that new teachers resort to the use of tech more frequently when it appears helpful and convenient. According to Konig et al. (2020), online teaching demonstrated that teachers were not adequately prepared to conduct online classes, and improved digital education is necessary.

Gamification implies applying elements of a game in the everyday lesson: points, badges, lists of ranks, challenges, to make the learning process interactive and student-centered. It sets to create competition, reward accomplishment, and allow learners to observe their progress.

The research by Hamari et al. (2016) and Wang and Tahir (2020) demonstrates that the engagement, teamwork, and long-term memory can be enhanced through the use of game-based techniques. Kahoot, Quizizz, Classcraft, and Duolingo are tools that incorporate game tricks into their lessons giving teachers the ability to tailor the content to varying levels of learning and needs.

Hamari et al. (2016) cautioned though that excessive use of rewards may distract real learning and concentrate it on the point accumulation. Scherer and Siddique (2023), further stated that the teachers should possess good digital skills, and without this, the game features might not perform well.

It is evident in the literature that digital literacy is the prerequisite to the complete use of gamification in a classroom. Models like DigCompEdu and ICT Competency Framework by UNESCO present step-by-step instructions to develop these skills but continuous training of teachers is needed to address any shortcomings in the skills. Without adequate digital skills, gamification risks being underutilized or misapplied; with them, it becomes a powerful pedagogical tool capable of boosting motivation, engagement, and learning outcomes.

METHODOLOGY

We speak in a transparent way to indicate our research. The research is the investigation of the impact of the digital skills of teachers on the application of game-based learning in elementary classrooms in Cabiao, Nueva Ecija.The approach is structured into the following key phases:

1. Objective Definition

the research involved the association of the digital abilities of teachers with their application of gamification in elementary school in Cabiao, Nueva Ecija. It assessed the self-rating of teachers in terms of their digital skills, the frequency of their use of gamification, and the relationships. The research found that there are many good things about using gamification, some of which are difficult, and what can be learned, indicating the importance of digital competence in achieving good outcomes.

2. Scenario Development

In the study, there were four schools of elementary level that were carefully selected; San Antonio Bagong Buhay, Sinipit, Cabiao Central and Bagong Silang Elementary Schools due to the availability of digital tools and the use of the game-like learning activities. All available teachers from these schools participated, regardless of teaching experience, subject specialization, or current level of digital proficiency. Scenarios reflected real classroom conditions where teachers integrated digital tools and gamified elements, such as points, badges, leaderboards, and collaborative or competitive activities, into their lessons.

3. Setup and Configuration

The study employed a descriptive-quantitative research design using total population sampling, resulting in 92 teacher-respondents. A self-made, three-part questionnaire was the primary research instrument: (1) teachers' perceived digital literacy skills, (2) frequency of gamification use, and (3) perceptions of how digital literacy influences gamification implementation. Items used a 5-point Likert scale for agreement and frequency. The instrument underwent expert validation, ethical clearance from the University Research Ethics Committee, and reliability testing, yielding Cronbach's alpha values of 0.887 for digital literacy and 0.854 for gamification strategy, indicating strong internal consistency.

4. Step-by-Step Execution

The research was permission to conduct the study was first obtained from the Schools Division Superintendent of Nueva Ecija (March 5, 2025), followed by the District Supervisor of SDO Cabiao Annex (March 27, 2025), and then the principals of the four participating schools (April 2–4, 2025). Once approvals were secured, the researchers personally administered the questionnaires to all respondents during official school hours. Instructions were explained in detail to ensure clarity, and responses were collected immediately after completion to avoid loss or alteration of data.

5. Data Collection

The researchers gathered information from both primary and secondary sources. Primary data were gathered from teachers' responses to the questionnaire, while secondary data (as applicable) could include institutional records related to teaching practices. The questionnaire measured teachers' self-assessment of digital literacy and their use of gamification elements. The collected data were systematically encoded and prepared for statistical analysis.

6. Evaluation and Iteration

The study utilized weighted mean to determine overall levels of agreement and frequency, and Pearson's product-moment correlation coefficient to identify the relationship between digital literacy and gamification implementation. Decision rules followed the 0.05 significance level threshold, with p-values $\leq$ 0.05 indicating significant correlation. The analysis was guided by prior research linking digital literacy with effective gamification, allowing the results to be interpreted within existing theoretical and empirical contexts.

7. Conclusion and Next Steps

The research was well planned to address digital skills of teachers and their application of the game-based teaching strategies. The findings are supposed to aid in forming the future teacher preparation, policy on digital proficiency, and more investigations around the interaction of teacher skills and technology-based instruction.

RESULTS & DISCUSSION

The researchers examined the perceptions of 92 elementary teachers in four state schools in Cabiao, Nueva Ecija regarding digital skills and the use of games in teaching. The majority of educators express the point that digital literacy is important to gamification in a strong manner. They provided a weighted average of 4.27, thus really "Strongly Agree". The fact that teachers with improved digital skills would be able to use gamification scored best with 4.42. The other high score was 4.38, which indicates that students react well to lessons that are based on digital skills. These results confirm the study carried by Boyd (2021), which showed that digital skills increase the interest of students and gamified learning success.

As soon as educators discussed certain gamification practices, the overall mean was 3.96, which implies an agreement. This indicates that such approaches are frequently utilized by the teachers. The most frequently practiced tactic was an emphasis in competitions or teamwork in activities with a weighted mean of 4.05. More common strategies included checking the effectiveness of gamification (3.95), using points, badges, and leaderboards to motivate students (3.87). These findings are consistent with what Kapp (2012) asserts that good gamification requires a plan, objectives, and consistent reviews.

The Pearson correlation test found a moderate positive link between teachers' digital skills and how they use gamification ($r = 0.522$, $p < .001$). This implies that teachers who have higher digital skills will be likely to implement gamification and hence the study did not accept the notion of no relationship. Concisely, gamification is not a new idea that is in the classroom, and the study indicates that enhancing the digital literacy of teachers would help to enhance gamified learning even more, which is another reason why Scherer and Siddique (2023) believe that having solid digital skills is the key to effectively using gamification.

CONCLUSION

The research revealed that the elementary school educators in the town of Cabija, Nueva Ecija are well equipped in digital skills and gamification is applied in their teaching classes. The teachers confirmed that further enhancement of digital literacy would assist them in greater using gamification. The correlation between the digital skill of the teachers and the frequency and quality in which they use gamification was observed to be positive and definite. This implies that digital competence is necessary to be able to add elements of games in class successfully. Although gamification is already implemented in the work of teachers, more effective and positive design, delivery, and effects of the strategies can be achieved by improving the digital skills of teachers, which helps to make the process of learning more engaging and effective among students.

RECOMMENDATIONS

According to the results of the study, school administrators ought to spearhead frequent and intensive training processes to enable teachers develop their digital capabilities. Such trainings must not be simple technology utilization, but it must also involve creating interactive lesson plans, solving the issues connected to digital tools, and leveraging data to enhance lessons. Educators themselves are to seek the opportunities to improve their digital skills, experiment with various gamification concepts, and collaborate with other educators to exchange ideas and best practices. In that way, they will be able to develop and implement gamified lessons that are not only entertaining but corresponding to the learning objectives. The future researchers must extend the research to include more towns, the various grade levels, and more subjects and in addition to this, they should also examine other variables such as the performance of the students, their motivation, and their interest in the classroom. A broader investigation will provide a better and in-depth overview of the impact of digital skills and gamification combined on teaching and learning in most types of

schools.

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