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# THE RELATIONSHIP BETWEEN PUBLIC ELEMENTARY SCHOOL TEACHERS' ICT (INFORMATION AND COMMUNICATIONS TECHNOLOGY) LITERACY AND STUDENTS' LEARNING OUTCOMES IN ORAS WEST DISTRICT

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**ABSTRACT**
*This study investigates the relationship between public elementary school teachers' ICT (Information and Communications Technology) literacy and their students' learning outcomes in Oras West District. Employing a quantitative descriptive-correlational research design and total enumeration sampling, data was collected from teachers using a researcher-designed survey. The survey assessed teachers' self-reported ICT proficiency across various digital tools and their perceptions of student learning outcomes in mathematics, science, language, problem-solving skills, and digital literacy. Findings revealed that teachers perceive their ICT literacy and student learning outcomes as generally neutral. Furthermore, statistical analysis indicated no significant correlation between teachers' ICT literacy levels and their students' perceived learning outcomes. The study recommends targeted professional development for teachers, further investigation into factors influencing student learning outcomes, and exploration of alternative ICT integration approaches.*

**KEYWORDS**: *ICT literacy, student learning outcomes, elementary school teachers, technology integration, digital literacy*

## INTRODUCTION

The successful integration of ICT in education is paramount for equipping students with the essential 21st-century skills necessary for success in a rapidly evolving digital world (Zou et al., 2025). This involves equipping them with the digital literacy, critical thinking, and collaborative abilities needed to thrive in a rapidly changing world. ICT integration fosters a dynamic and engaging learning environment, improves access to educational resources, and promotes personalized learning experiences (Faig, 2023). Much of this research focuses on developed nations or specific technological applications, leaving a significant gap in our understanding of the situation in the Philippines, specifically within the context of public elementary schools in Oras West District.

Digital learning transforming education globally. There's a growing recognition of the crucial role of ICT literacy in preparing students for a technologydriven world. The Philippines is actively promoting ICT integration in its education system, yet challenges remain in ensuring effective teacher training and implementation. This research directly addresses this disparity, examining the practical realities faced by teachers in Oras West District and the resulting impact on students. The daily struggles faced by these teachers, from limited access to technology to inadequate training, directly affect students' learning experiences. Can students truly thrive in a digital age if their teachers lack the necessary skills to effectively utilize technology in the classroom? This question highlights the urgent need for this research.

Prior research, while valuable, often fails to adequately address the specific challenges inherent in the Philippine public school system. Studies focusing on teacher ICT literacy may not have examined the unique socio-economic factors influencing teacher training and resource allocation in Oras West District, nor have they explored the specific learning outcomes relevant to the local curriculum. This research aims to fill this gap by providing a nuanced understanding of the relationship between teacher ICT literacy and student learning outcomes within this specific context. The units of analysis are public elementary school teachers and their students in Oras West District, with observations focusing on teacher ICT usage in the classroom and corresponding student performance data.

This research is crucial because it promises to provide actionable insights for improving teacher training programs and resource allocation in Oras West District. By identifying the specific areas where teachers lack proficiency and understanding the correlation between these deficiencies and student outcomes, we can develop targeted interventions to enhance both teacher skills and student learning. Ultimately, this research seeks to contribute to a more effective and equitable education system, ensuring that all students in Oras West District have the opportunity to succeed in an increasingly digital world. The researcher hopes to uncover the strength of the relationship between teacher ICT literacy and student learning outcomes, identifying specific aspects of ICT literacy that most significantly impact student achievement. This will contribute to a more complete understanding of the phenomenon and inform the development of more effective educational policies and practices.

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**Statement of the Problem**

The researcher decided to conduct the study on the relationship between public elementary school teachers' ICT literacy and students' learning outcomes in Oras West District. Specifically, this study has defined the following problems:

1. What is the level of ICT literacy among public elementary school teachers in Oras West District, considering their self-reported proficiency in using the following:
   - 1.1 Word Processing
   - 1.2 Presentation Software,
   - 1.3 Educational Apps
   - 1.4 Online Resources
   - 1.5 Digital Tools for Teaching

2.What are the perceived learning outcomes of students in Oras West District, as reported by their teachers, in terms of subject-specific achievement
   - 1.6 Mathematics
   - 1.7 Science
   - 1.8 Language
   - 1.9 Problem-Solving Skills
   - 1.10 Digital Literacy

3.What is the correlation between public elementary school teachers' ICT literacy levels and their students' learning outcomes in Oras West District?

## METHODS

**Research Design**

This study employed a quantitative descriptive-correlational research design to investigate the relationship between public elementary school teachers' ICT (Information and Communications Technology) literacy and students' learning outcomes in Oras West District. This design was appropriate for collecting quantitative data to describe the variables of interest and to determine their relationships through correlation analysis.

The research questions aligned well with this design, aiming to assess the level of ICT literacy among public elementary school teachers in Oras West District, considering their self-reported proficiency in using word processing, presentation software, educational apps, online resources, digital tools for teaching; to survey the perceived learning outcomes of students in Oras West District, as reported by their teachers, in terms of subject-specific achievement such as Mathematics, Science, language, problem-solving skills and digital literacy; and validate the correlation between public elementary school teachers' ICT literacy levels and their students' perceived learning outcomes in Oras West District.

Using a quantitative descriptive-correlational research design enabled the researchers to collect data from a representative sample of public elementary school teachers in Oras West District and analyze the relationships between the variables. This design allowed for the examination of the relationship between public elementary school teachers' ICT (Information and Communications Technology) literacy and students' learning outcomes.

**Study Site and Respondents**

The study was conducted in Oras West District, focusing on elementary schools within the district to assess the relationship between public elementary school teachers' ICT (Information and Communications Technology) literacy and students' learning outcomes.

This study took place in schools of Oras West District, Oras, Eastern Samar. The schools were as follows: (1) Oras West Central Elementary School, (2) Agsam Elementary School, (3) Balingasag Elementary School, (4) Batang Elementary School, (5) Cadian Elementary School, (6) Cagpile Elementary School, (7) Minap-os Elementary School, (8) Naga Elementary School and (9) Rizal Elementary School.

The respondents of this study consisted of public elementary school teachers from various schools within the Oras West District, located in Oras, Eastern Samar. The selected schools for this research included Oras West Central Elementary School, Agsam Elementary School, Balingasag Elementary School,
Batang Elementary School, Cadian Elementary School, Cagpile Elementary School, Minap-os Elementary School, Naga Elementary School, and Rizal Elementary School. The inclusion of multiple schools allowed for a diverse representation of teachers, ensuring that the findings were more generalizable across different contexts within the district. This diversity was essential for understanding the varying levels of ICT literacy among teachers and how that literacy may have influenced student learning outcomes.

The target population primarily included teachers who were directly involved in teaching elementary students. This encompassed various subject areas, including mathematics, science, language, and digital literacy. By focusing on teachers, the study aimed to gather insights regarding their self-reported proficiency in using various ICT tools, such as word processing software, presentation software, educational apps, online resources, and digital tools for teaching. The teachers' experiences and perceptions regarding their ICT literacy were crucial for understanding how these skills translated into classroom practices and, ultimately, student learning outcomes. The study ensured that a representative sample of teachers was included, considering factors such as years of teaching experience, subject specialization, and prior training in ICT usage.

The study also involved the collection of data regarding the perceived learning outcomes of students as reported by their teachers. This dual approach— gathering information from teachers about their ICT literacy and their students' learning outcomes— provided a comprehensive view of the relationship between these two variables. The teachers' insights into their students' achievements in specific areas, such as mathematics, science, language, problemsolving skills, and digital literacy, were invaluable. By correlating the data on teachers' ICT literacy levels with the perceived learning outcomes of their students, the study aimed to uncover patterns and relationships that could inform educational practices and policies in the Oras West District and beyond.

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**Data Analysis**

This quantitative study employed descriptive and correlational analyses to examine the relationship between teacher ICT literacy and student learning outcomes. For Research Question 1, descriptive statistics (means, standard deviations, and frequencies) were computed for teachers' self-reported proficiency in using various ICT tools, as measured by a 5-point Likert scale. These descriptive statistics provided a clear picture of the overall level of ICT literacy among teachers in the Oras West District. Similarly, Research Question 2 was addressed using descriptive statistics to analyze teachers' perceptions of their students' learning outcomes across different subject areas and skills, again using the 5-point Likert scale.

To investigate the relationshipbetween teacher ICT literacy and student learning outcomes (Research Question 3), a correlational analysis was conducted. Specifically, Pearson's correlation coefficient was calculated to determine the strength and direction of the association between an aggregate ICT literacy score (derived from individual ICT tool proficiency scores) and an aggregate perceived student learning outcome score (derived from individual subject area scores). This analysis tested the null hypothesis that there was no correlation between these two variables.

The significance of the correlation coefficient was assessed using a pre-determined alpha level (e.g., $\alpha = 0.05$). The magnitude of the correlation coefficient was interpreted to determine the strength of the relationship (e.g., a coefficient of 0.7 would suggest a strong positive correlation). The direction of the correlation indicated whether higher teacher ICT literacy was associated with higher or lower perceived student learning outcomes.

The findings from both the descriptive and correlational analyses were interpreted in the context of existing literature and the study's theoretical framework. The limitations of the study were acknowledged, and the implications of the findings for educational practice and policy were discussed. This comprehensive approach provided a robust and nuanced understanding of the relationship between teacher ICT literacy and student learning outcomes in the Oras West District.

## RESULTS

**ICT Literacy Among Public Elementary School Teachers**

| ICT Literacy Among Public Elementary School Teachers | Mean | Interpretation |
|---|---|---|
| Word Processing | 2.72 | Neutral |
| Presentation Software | 3.05 | Neutral |
| Educational Apps | 2.86 | Neutral |
| Online Resources | 3.04 | Neutral |
| Digital Tools for Teaching | 2.77 | Neutral |
| **Aggregate Mean** | **2.88** | **Neutral** |
| Digital Literacy | 2.76 | Neutral |
| **Aggregate Mean** | **2.75** | **Neutral** |

**Perceived Learning Outcomes of Students**

| Perceived Learning Outcomes of Students | Mean | Interpretation |
|---|---|---|
| Mathematics | 2.79 | Neutral |
| Science | 2.74 | Neutral |
| Language | 2.72 | Neutral |
| Problem-Solving Skills | 2.74 | Neutral |

**Correlation Between Public Elementary School Teachers' ICT Literacy Levels and Their Students' Learning Outcomes**

| Between Public Elementary School Teachers' ICT Literacy Levels | Perceived Learning Outcomes of Students | | | | |
|---|---|---|---|---|---|
| | LO 1 (Mathematics) | LO 2 (Science) | LO 3 (Language) | LO 4 (Problem-Solving Skills) | LO 5 (Digital Literacy) |
| **Word Processing** | r = -0.097 | r = 0.093 | r = 0.059 | r = 0.071 | r = 0.099 |
| | p = 0.687 | p = 0.699 | p = 0.811 | p = 0.767 | p = 0.681 |
| | Not Significant | Not Significant | Not Significant | Not Significant | Not Significant |
| **Presentation Software** | r = -0.473 | r = 0.526 | r = 0.124 | r = 0.099 | r = -0.037 |
| | p = 0.076 | p = 0.376 | p = 0.233 | p = 0.141 | p = 0.878 |
| | Not Significant | Not Significant | Not Significant | Not Significant | Not Significant |
| **Educational Apps** | r = 0.371 | r = 0.189 | r = 0.279 | r = 0.294 | r = 0.389 |

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| | | | | | |
|---|---|---|---|---|---|
| | p = 0.114 | p = 0.434 | p = 0.246 | p = 0.221 | p = 0.096 |
| | Not Significant | Not Significant | Not Significant | Not Significant | Not Significant |
| **Online Resources** | r = 0.127 | r = -0.009 | r = 0.065 | r = 0.099 | r = 0.094 |
| | p = 0.594 | p = 0.970 | p = 0.790 | p = 0.681 | p = 0.696 |
| | Not Significant | Not Significant | Not Significant | Not Significant | Not Significant |
| **Digital Tools for Teaching** | r = 0.349 | r = 0.149 | r = 0.249 | r = 0.264 | r = 0.367 |
| | p = 0.135 | p = 0.534 | p = 0.298 | p = 0.271 | p = 0.118 |
| | Not Significant | Not Significant | Not Significant | Not Significant | Not Significant |

Note: *Tested at 0.05 level of significance, two-tailed*
*LO 1 – Mathematics*
*LO 2 – Science*
*LO 3 – Language*
*LO 4 – Problem-Solving Skills*
*LO 5 _Digital Literacy*

## DISCUSSION

### ICT Literacy Among Public Elementary School Teachers

Table 1 presents an overview of the ICT literacy among public elementary school teachers, revealing a generally neutral perception across various digital competencies. The data indicates the following mean scores: Word Processing (2.72), Presentation Software (3.05), Educational Apps (2.86), Online Resources (3.04), and Digital Tools for Teaching
(2.77).

Table 1 presents an overview of the ICT literacy among public elementary school teachers, revealing a generally neutral perception across various digital competencies. While teachers show moderate comfort with presentation software and online resources, their perceived proficiency in word processing, educational apps, and digital tools for teaching hovers around a neutral level. This suggests a potential opportunity to enhance teachers' skills in these areas, which are crucial for effective integration of technology in the classroom.

The neutral stance on ICT literacy implies that while teachers may possess basic skills, they might lack the confidence or expertise to fully leverage these tools for innovative teaching practices. This could stem from inadequate training, limited access to resources, or a lack of consistent support. Prior research has emphasized the importance of continuous professional development to bridge the gap between basic ICT skills and effective pedagogical integration (Abbasi, Abbasi, Alvi, & Junejo, 2025). The current findings underscore the need for targeted interventions that go beyond introductory training to foster deeper engagement and proficiency.

### Perceived Learning Outcomes of Students

Table 2 presents an overview of the perceived learning outcomes of students, as reported by their teachers. The data reveals a generally neutral perception across key academic areas. Specifically, the mean scores for Mathematics (2.79), Science (2.74), Language (2.72), Problem-Solving Skills (2.74), and Digital Literacy (2.76) all indicate a neutral interpretation. The aggregate mean for perceived learning outcomes is 2.75, reinforcing this overall neutral assessment.

The neutral perception of student learning outcomes suggests that teachers, on average, neither strongly agree nor disagree with the assertion that students are achieving desired outcomes in these areas. This could reflect a variety of factors, such as the effectiveness of current teaching methods, the availability of resources, or the level of student engagement. Further investigation would be needed to determine the underlying causes of these neutral perceptions.

The significance of these findings lies in their potential to inform targeted interventions and support for students. By identifying specific areas where student learning outcomes are perceived as neutral, schools can focus resources and efforts on improving teaching strategies, providing additional support to students, or enhancing the learning environment. Addressing these areas could lead to improved student achievement and a more positive perception of learning outcomes among teachers.

### Correlation Between Public Elementary School Teachers' ICT Literacy Levels and Their Students' Learning Outcomes

Table 3, which explores the correlation between teachers' ICT literacy and student learning outcomes, reveals a landscape of non-significant relationships. Across various ICT tools—from basic word processing to more advanced digital tools for teaching—and their potential impact on student performance in Mathematics, Science, Language, Problem-Solving Skills, and Digital Literacy, the data suggests no statistically significant correlation.

Specifically, the analysis, drawing from survey responses of teachers in elementary schools, presents correlation coefficients (r-values) that range from -0.473 to 0.526. While some of these values indicate moderate positive or negative associations, the corresponding p-values, all exceeding the 0.05 significance threshold, render these relationships statistically insignificant. This means that, based on this dataset, we cannot conclude that a teacher's proficiency in using these ICT tools has a direct,

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measurable impact on student learning outcomes in the specified areas.

The implications of this finding are nuanced. It does not necessarily mean that ICT literacy is irrelevant to student learning. Instead, it suggests that the relationship may be more complex than a simple linear correlation. Factors such as the quality of ICT integration, the specific pedagogical approaches used, and the availability of resources may play a more critical role in determining the impact of technology on student outcomes. This could be due to a variety of factors, such the use of self-reported data, or the presence of other variables that influence student learning outcomes. Further research with more objective measures may be needed to explore these relationships in more detail.

## CONCLUSIONS

The following were the conclusions drawn based on the findings of this study:

1. Teachers in Oras West District exhibit a generally neutral level of ICT literacy across various digital tools.
2. Teachers' perceptions of their students' learning outcomes in key academic areas are also generally neutral.
3. There is no statistically significant correlation between teachers' ICT literacy and their students' perceived learning outcomes in Oras West District.

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