POLYTECHNIC UNIVERSITY OF THE PHILIPPINES

"Enhancing Digital Literacy in Nursery and Pre-Elementary Programs: Developing a System through Innovative Plan for Online Educational Initiatives on Knowledge Disparities"

A Research Study Presented to Dr. Ruth Jade Simbulan

By:

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February, 2024

ABSTRACT

The research aims to enhance digital literacy in nursery and pre-elementary programs by analyzing knowledge disparities and defining a digital literacy framework aligned with developmental milestones. Titled "Enhancing Digital Literacy in Nursery and Pre-Elementary Programs: Developing a System through Innovative Plan for Online Educational Initiatives on Knowledge Disparities," the study offers insights into digital literacy initiatives, presenting viewpoints from teachers and parents. It highlights the importance of developing a user-friendly system for young learners to improve educational access and quality. Recommendations include developing a tailored digital literacy curriculum, educating parents about online education benefits, providing teacher training, fostering parent-teacher communication, empowering students in digital learning, and exploring the impact of digital literacy on academic and social-emotional development, as well as strategies for enhancing digital equity in early childhood education.

INTRODUCTION

Project Context

In the rapidly evolving landscape of education, the integration of digital literacy into early childhood education has become an imperative to prepare the youngest learners for the demands of the 21st century. Nursery and pre-elementary programs serve as the foundation for a child's cognitive, social, and emotional development, making them pivotal stages for introducing innovative approaches to learning. The advent of digital technologies offers unique opportunities to enhance educational experiences for young children, but it also reveals significant knowledge disparities that must be addressed. Digital literacy in the context of early childhood education goes beyond merely navigating electronic devices. It encompasses the ability to critically engage with digital content, develop foundational skills for future technological advancements, and cultivate a healthy relationship with digital tools. This research seeks to explore the multifaceted dimensions of digital literacy in nursery and pre-elementary programs, focusing on the development of a systematic approach through innovative online educational initiatives aimed at bridging knowledge disparities among young learners.

The significance of this research lies in the recognition of the digital divide that often manifests at an early age, resulting in unequal access to educational resources and opportunities. Children from diverse socio-economic backgrounds may experience varying levels of exposure to digital tools, leading to disparaging

gaps in digital literacy skills. Addressing these disparities is crucial for fostering an inclusive educational environment that nurtures the cognitive development of all children, irrespective of their socio-economic backgrounds. Through the implementation of an innovative plan for online educational initiatives, this research aims to create a comprehensive system that not only introduces digital literacy but also addresses the unique learning needs of nursery and pre-elementary students. By incorporating interactive and age-appropriate digital resources, the proposed system intends to foster a love for learning, stimulate creativity, and build foundational skills that are essential for future academic success.

In the following sections of this research, we will delve into the theoretical frameworks underpinning digital literacy in early childhood education, examine the existing knowledge disparities, and propose a systematic and innovative plan for online educational initiatives. By doing so, this study seeks to contribute valuable insights to the ongoing discourse on enhancing early childhood education through the integration of digital literacy, with a specific emphasis on narrowing knowledge disparities among young learners. The acceleration of technological advancements in recent years has transformed the way we live, work, and communicate. Consequently, the field of education is compelled to adapt to this digital era, with a particular emphasis on early childhood education. Research indicates that the early years of a child's life are critical for brain development, making it an opportune time

to introduce digital literacy skills that will be fundamental for their future academic and personal success.

As we navigate the complexities of introducing digital literacy to nursery and pre-elementary programs, it is crucial to understand the broader implications of knowledge disparities that emerge at this foundational stage. The digital divide not only hampers access to information but also affects a child's ability to harness the full potential of digital tools for cognitive development. This research, therefore, aims to elucidate the various dimensions of knowledge disparities among young learners and propose an innovative plan that not only addresses these disparities but also capitalizes on the benefits of early exposure to digital literacy. By embracing an inclusive and forward-thinking approach, this study seeks to create a blueprint for a system that goes beyond the conventional boundaries of early childhood education. The proposed plan for online educational initiatives is designed to cater to the diverse needs of children, taking into account their individual learning styles, interests, and socio-economic contexts. Through the integration of interactive multimedia content, educational games, and collaborative learning experiences, the system aims to foster a holistic development that encompasses cognitive, social, and emotional domains.

Purpose and Description

This research aims to reduce knowledge disparities in digital literacy among nursery and pre-elementary students by developing an adaptable system with innovative online educational initiatives. Focused on the unique needs of children aged 3 to 6, the study assesses existing challenges and variations in digital literacy, proposing a comprehensive framework.

Significance of the Study

The significance of the study on "Enhancing Digital Literacy in Nursery and Pre-Elementary Programs: Developing a System through Innovative Plan for Online Educational Initiatives on Knowledge Disparities" lies in its potential to address critical gaps in early childhood education and contribute to the holistic development of young learners. Several key stakeholders stand to benefit from the outcomes of this study.

Educators and Teachers. Teachers will gain insights into effective strategies for integrating digital literacy in nursery and pre-elementary programs. The study's findings can equip them with innovative plans to enhance their teaching methods, catering to diverse learning needs.

Parents and Guardians. Parents will receive guidance on how to actively engage with their children in fostering digital literacy skills. The study can empower parents to play a more supportive role in their child's educational journey, especially in the context of online educational initiatives.

Technology Developers and Educational Platforms. Developers of educational technology and online platforms can gain a better understanding of the needs and challenges faced in nursery and pre-elementary settings. This knowledge can guide the creation of user-friendly and age-appropriate digital tools.

Future Researchers. The study provides a foundation for future research endeavors in the field of early childhood education, digital literacy, and online educational initiatives. Researchers can build upon the findings to explore new dimensions, refine methodologies, and contribute to the ongoing advancement of knowledge in this critical area.

Nursery and Pre-elementary Students. Nursery and pre-elementary students are the primary beneficiaries, as the study aims to enhance their digital literacy skills. The innovative plans developed through this research can create a more engaging and effective learning environment, preparing them for the digital age.

In summary, the study holds significance by offering practical insights and solutions to improve digital literacy in early childhood education, particularly in addressing knowledge disparities. The benefits extend to educators, parents, technology developers, researchers, and most importantly, the students, fostering a more inclusive and effective learning environment for the youngest members of our society.

Conceptual Framework

The Input-Process-Output (IPO) model illustrates how inputs become outputs through processes, aiding in understanding system dynamics.

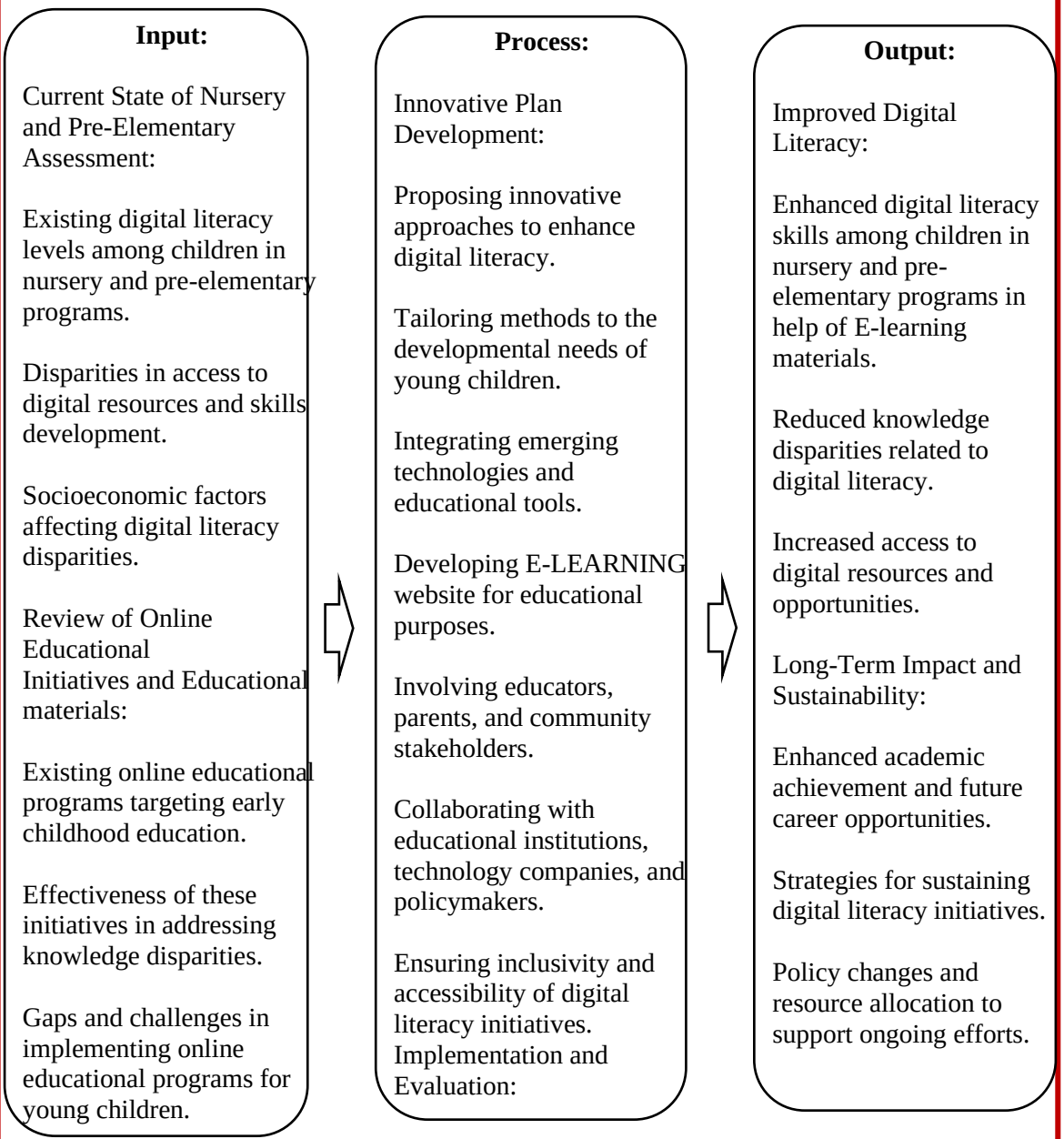

Figure 2. The Research Paradigm

This research framework emphasizes cooperation, creativity, and sustainability as key components of a methodical approach to tackling the problems with digital literacy in early childhood education. In order to improve digital literacy, educators, parents, and other stakeholders collaborate. In order to properly address children's developmental needs, the research employs innovation to produce customized techniques and incorporate cutting-edge technologies. Prioritizing sustainability means using tactics like shifting legislation and redistributing resources to make sure the changes have a lasting effect. Lastly, the study seeks to identify a complete remedy for the differences in digital literacy in early childhood education.

Objectives of the Study

The research aims to enhance digital literacy in nursery and pre-elementary programs through a concise set of objectives. The study analyzes knowledge disparities, aiming to understand their extent and contributing factors. To address the challenges, the research defines a digital literacy framework aligned with developmental milestones. It also identifies innovative online initiatives focusing on inclusivity and knowledge disparities. The study designs an adaptable educational system, incorporating age-appropriate pedagogy and ensuring accessibility.

The objectives of the study are the following:

1. To develop a user-friendly and efficient system specifically for nursery and pre-elementary education.

2. To identify challenges in accessing digital resources and teacher readiness

3. To propose innovative online educational initiatives that address knowledge disparities among young learners.

STATEMENT OF THE PROBLEM

This research is dedicated to discerning and addressing critical issues in current approaches to digital literacy in early education, with a primary focus on developing an innovative framework for online educational initiatives. Despite its undeniable significance, seamlessly incorporating digital literacy into nursery and pre-elementary programs, particularly in mitigating knowledge disparities among young learners, remains a formidable challenge.

Specifically, the researchers, through this study, aimed to answer the following:

1. The demographic profile of the respondents in terms of:

1.1 Name

1.2 Age

1.3 Occpation

1.4 Gender

2. What is the assessment of the teachers in the use of the proposed E-Learning System in terms of:

2.1 Efficiency

2.2 Adaptability

3. What is the assessment of the parents in the use of the proposed E-Learning System in terms of:

3.1 Efficiency

2.2 Adaptability

Scope and Limitations

This research study concentrates on the critical domain of nursery and pre-elementary education, specifically targeting children aged 3 to 6 years. The study extends its scope to the identification and integration of innovative online educational initiatives, ensuring their alignment with the comprehensive digital literacy framework. In an effort to address the diverse nature of nursery and pre-elementary programs, the study ambitiously aims to design an adaptable educational system. This system should be versatile enough to be implemented across various educational settings, accommodating differences in resources, infrastructure, and teaching methodologies. While this research aspires to make meaningful contributions, certain limitations are intrinsic to its scope and approach. Generalizing findings across all nursery and pre-elementary programs may be challenging due to the inherent diversity in educational settings. The study

recognizes potential constraints related to resources, both technological and financial, which might hinder the widespread adoption of the developed system. Variability in teacher training poses another limitation, as the impact of the system could differ based on the proficiency and adaptability of individual educators. Addressing challenges related to technological infrastructure, including issues of internet connectivity, may impact the successful implementation of online educational initiatives. Furthermore, due to the time constraints of the study, a comprehensive assessment of the long-term impact of the developed system on students' academic success may be limited.

Definition of Terms

Digital literacy - means having the skills you need to live, learn, and work in a society where communication and access to information is increasingly through digital technologies like internet platforms, social media, and mobile devices.

Disparities - a difference in level or treatment, especially one that is seen as unfair.

Technology - is the application of conceptual knowledge for achieving practical goals, especially in a reproducible way. The word technology can also mean

the products resulting from such efforts, including both tangible tools such as utensils or machines, and intangible ones such as software

Educational Initiatives - are programs that focus on every young person's potential to learn and be successful.

Pre-elementary education - is the education of children before they begin elementary school, it typically includes children from the ages of three to five.

User-friendly - (of a machine or system) easy to use or understand.

REVIEW OF RELATED LITERATURE / SYSTEMS

Local

According to Liao et al(2021), it is important to identify the key components that teachers should consider for effective online instruction in traditional elementary education settings. While the urgency of online learning may diminish post-COVID-19, the identified components are anticipated to remain relevant for in-person K-12 education. The findings are applicable to various scenarios, including e-Learning Days, professional development days, snow days, or lessons conducted by substitute teachers. These results can also guide elementary teachers in utilizing technology tools and digital resources for course organization, student engagement, and interaction within their classrooms. Further research opportunities include exploring variations in online instruction design and student facilitation across different subject areas and school contexts at the elementary level.

Christopher DC. Francisco and Marites C. Barcelona (2020) study concludes that Eliademy, a web-based classroom, is an effective tool for teaching and learning during calamities, promoting accessibility, time management, and promptness. The process of using Eliademy involves signing in, designing the classroom, and managing it. Additionally, there are other web-based classrooms available besides Eliademy. Recommendations include incorporating Eliademy into regular teaching routines, considering its premium features for enhanced

functionality, and promoting awareness and training on utilizing web-based platforms to improve education quality.

Illescas et al (2023) stated that the COVID-19 pandemic necessitated a shift to online learning in the educational sector, prompting universities to offer various learning modalities. Despite the availability of face-to-face and blended options, students exhibit a strong intention to continue with online learning, as evidenced by findings from a study utilizing the expectation–confirmation theory (ECT), self-determination theory (SDT), and theory of planned behavior (TPB). Structural equation modeling (SEM) revealed that attitude towards behavior, expectation, satisfaction, and competency significantly influence students' behavioral intention towards online learning. Students perceive online learning as comfortable, conducive to knowledge acquisition, time management, and future career prospects. With technology and education alignment improving, universities should focus on enhancing their online platforms to meet student needs.

Foreign

Deborah Rosenfeld (2022) created an app that support childrens learning from pre-elem. The app supports children learning what kinds of questions can be answered through data collection, and then it scaffolds the data collection, representation, and analysis processes. Questions can arise from authentic

experiences, and then data is used to answer these questions and tell stories about phenomena that children are noticing and exploring. In this way, the app provides an environment in which children and their teachers can play with data. The app provides ideas and a structure for engaging in such play-based explorations but also provides space for children to generate their own questions to explore, discuss, and expand upon. All of these graphs can be combined to tell a story about what was investigated and learned that incorporates the collected data. A teacher or other adult can (and likely must) help students with all of this, but they get to do so as playful co-participants and guides.

Viñuela and Fuertes (2023) studied the impact of active methodologies on the intrinsic motivation of students aged 3-6 in pre-school education. Findings showed that incorporating active learning methods improved motivation, with girls and older students demonstrating higher levels. The type of classroom and methodology influenced motivation, particularly with project-based learning (PBL) and a combination of traditional worksheets and PBL. The study highlighted the importance of using active methodologies in pre-school education, contributing to improved teaching practices and emphasizing the role of the learning environment. The results suggest that implementing these methods from the early stages can positively impact students' learning motivation throughout their educational journey.

Nadeen Hamzeh (2021) studied the exploring practices that promote students' mental and emotional well-being, fostering quality relationships among students and staff, and establishing safe and inclusive climates within online platforms, particularly during crises like the COVID-19 pandemic. Using a framework combining Critical Race Theory, Online Learning pedagogy, and Social and Emotional Learning, the study aimed to identify protective and risk factors affecting students' ability to cope and thrive. Qualitative interviews with educators and bilingual/non-native English-speaking parents in low-income public primary schools revealed key findings: students' identities extend beyond academics, there's a surprisingly high level of expected responsiveness online, and new connections and support systems emerged. These findings carry significant implications for evolving online learning practices among teachers and educational professionals.

METHODOLOGY, RESULTS AND DISCUSSIONS

METHODOLOGY

Research Methods and Design/s Used

The research methodology for "Enhancing Digital Literacy in Nursery and Pre-Elementary Programs: Developing a System through Innovative Plan for Online Educational Initiatives on Knowledge Disparities" will employ a quantitative research design to systematically evaluate the impact of digital literacy initiatives.

Surveys will be administered to educators and parents to gather quantitative data on their perceptions and feedback regarding the effectiveness of the initiatives. Statistical analyses will be employed to assess the statistical significance of the study. Ethical considerations, including obtaining informed consent and ensuring participant confidentiality, will be adhered to throughout the study. The quantitative results will be synthesized to draw conclusions about the efficacy of the digital literacy program in reducing knowledge disparities among nursery and pre-elementary students.

Population Frame and Sampling Scheme

In this study, the researchers will use purposive sampling, a careful selection of nursery and pre-elementary schools will be undertaken to ensure a diverse representation of participants. Within each selected school, participants will include educators, and parents. Educators will be selected based on their willingness to

participate and their roles in teaching digital literacy. Parents will be included based on their consent and active involvement in their child's education.

Description of Respondents

The respondents for this research on "Enhancing Digital Literacy in Nursery and Pre-Elementary Programs: Developing a System through Innovative Plan for Online Educational Initiatives on Knowledge Disparities" will be carefully selected to represent a diverse and meaningful cross-section of the targeted population. The respondents will include:

Table 1. Respondents Profile

GROUP	No.	DESCRIPTION
Educators	5	Nursery and pre-elementary educators actively involved in implementing the digital literacy program.
Parents or Guardian	10	Parents or guardians of the participating students who play a crucial role in supporting their child's education.

Instruments of the Study

The researchers will formulate a survey questionnaire to be distributed among the selected respondents, namely teachers and parents or guardians of nursery and

pre-elementary students, recognizing their crucial roles in the study. This questionnaire serves as the primary tool for collecting data and is specifically designed to address the identified research problem, encompassing both positive and negative aspects explored by the researchers. Comprising ten questions, the questionnaires will be disseminated to the targeted participants.

The data-gathering instrument adopts a structured scale ranging from 1 to 4, where (1) denotes "strongly disagree," (2) indicates "disagree," (3) signifies "agree," and (4) represents "strongly agree." This scaling system provides a nuanced framework for the respondents to express their opinions, facilitating a thorough analysis of the outcomes obtained during the research process.

Data Gathering Procedure

To conduct a comprehensive study on "Enhancing Digital Literacy in Nursery and Pre-Elementary Programs: Developing a System through Innovative Plan for Online Educational Initiatives on Knowledge Disparities," a carefully structured data gathering procedure is outlined. The research objectives and questions will be clearly defined, laying the groundwork for selecting suitable data collection methods and instruments. The target population, encompassing nursery and pre-elementary teachers, and parents, will be identified to ensure a representative sample. Employing one approach, the study will incorporate surveys.

For the survey data, a questionnaire will be created covering aspects related to digital literacy, online educational initiatives, and knowledge disparities.

Interviews will be conducted with key stakeholders, including teachers, and parents or guardians, using semi-structured or structured questions to gain in-depth insights. Ethical considerations, such as informed consent and participant confidentiality, will be strictly adhered to during the data collection process.

Upon completing data collection, statistical tools for quantitative data will be employed to derive meaningful insights. The research findings will be interpreted to address the research questions and objectives, and conclusions will be drawn. Recommendations for enhancing digital literacy in nursery and pre-elementary programs, taking into account identified knowledge disparities, will be provided in the final research report.

Statistical Treatment of Data

The data collected in this study will undergo statistical analysis to assess its utility and design. The results obtained from the gathered data will be employed to measure the effectiveness and appropriateness of the study. The frequency of each response will be determined by the count of respondents selecting a specific item. Additionally, the Demographic Profile of the participants will be established using the percentage formula.

P = Fx 100/ N

P = percentage

F = frequency

N = Total Number of respondents.

The verbal interpretation of the responses will follow below Likert scale:

Table 2. Verbal Interpretation

Scale	Range	Verbal Interpretation
4	4	Strongly Agree
3	3 to 3.99	Agree
2	2 to 2.99	Disagree
1	1 to 1.99	Strongly Disagree

CHAPTER IV

PRESENTATION, ANALYSES, AND INTERPRETATION OF DATA

This chapter explores the results, analyses, and comprehension of the gathered data. It tackles the research questions by presenting the data through tables and textual formats, utilizing statistical methods for thorough analysis and interpretation.

RESULTS AND DISCUSSIONS

Effectiveness of having an online educational system for nursery and pre-elementary students.

Table 3. Effectiveness Interpretation

Effectiveness	Weighted Mean		Verbal Interpretation	
	Teacher	Parents	Teacher	Parents
Parental involvement in supporting digital literacy at home positively impacts a child's overall learning experience.	3.60	2.70	Agree	Disagree
The current digital literacy curriculum in nursery and pre-elementary programs is sufficient for fostering essential skills.	3.40	2.20	Agree	Disagree
The available resources for digital literacy in early childhood education are adequately distributed and accessible.	3.60	2.50	Agree	Disagree

The current strategies employed to address knowledge disparities effectively cater to the diverse learning abilities of nursery and pre-elementary students.	3.60	2.90	Agree	Disagree
The time and effort invested in implementing digital literacy initiatives in early childhood education are justified by the educational benefits for students.	3.60	3.40	Agree	Agree
Collaboration between teachers, parents, and educational institutions is essential for the successful implementation of digital literacy initiatives in nursery and pre-elementary programs.	4.0	3.60	Strongly Agree	Agree
General Assessment	**3.63**	**2.88**	**Agree**	**Disagree**

Table 3 shows the effectiveness of having an online educational system. The teachers agreed that parental involvement in supporting digital literacy at home positively impacts a child's overall learning experience, while on the other hand, the parents or guardians of the nursery and pre-elementary students disagreed on this statement. The teachers also agreed that the current digital literacy curriculum in nursery and pre-elementary programs is sufficient for fostering essential skill with an average mean of 3.40, while the parents also disagreed having an average mean of 2.20, opposed the idea

showing the big difference between the two perspefctive. With the weighted mean of 3.60 the teachers agreed that the available resources for digital literacy in early childhood education are adequately distributed and accessible, and the parents having the weighted mean of 2.50 disagreed on this statement,. While both sides agreed that the time and effort invested in implementing digital literacy initiatives in early childhood education are justified by the educational benefits for students with the weighted mean of 3.60 for the teachers, and 3.40 for the parents. The parents also agreed that the collaboration between teachers, parents, and educational institutions is essential for the successful implementation of digital literacy initiatives in nursery and pre-elementary programs having an average mean of 3.60, while all the teachers in nursery and pre-elem that participated in the said study have a strong belief that it is really essential for the successful implementation having an average mean of 4.0 with a verbal interpretation of strongly agreed.

The general assessment shows an overall mean of **3.63** and a verbal interpretation of **Agree** for the teachers and a **2.88** overall mean with a verbal interpretation of **Disagree** for the parents. Where in this table shows that the teachers **Agreed** that the ideas of having an online educational system for nursery and pre-elementary is effective while on the other hand, the parents disagreed that it is indeed effective.

Table 4. Adaptability of having an online educational system for nursery and pre-elementary students.

Adaptability	Weighted Mean		Verbal Interpretation	
	Teacher	**Parents**	**Teacher**	**Parents**
I believe that integrating online educational initiatives can significantly improve the overall learning experience for nursery and pre-elementary students.	3.60	2.70	Agree	Disagree
I feel confident in my ability to effectively use digital tools and technology for teaching in nursery and pre-elementary settings.	3.60	2.60	Agree	Disagree
I am confident that incorporating innovative plans for online educational initiatives can contribute to reducing knowledge disparities among nursery and pre-elementary students.	3.40	3.0	Agree	Agree
I believe that parental involvement is crucial for the success of online educational initiatives in nursery and pre-elementary education.	3.60	2.40	Agree	Disagree
General Assessment	**3.55**	**2.68**	**Agree**	**Disagree**

Table 4 Shows the adaptability of the teachers and parents on overseeing the said online educational system for nursery and pre-elemenntary students. With an average mean of 3.60, the teachers believed that integrating online educational initiatives can significantly improve the overall learning experience of nursery and pre-elementary students, which the parents disagreed of having the average mean of 2.70. The teachers still having an average mean of 3.60 are confident in there ability to effectively use digital tools and technology for teaching in nursery and pre-elementary settings, where the parents still disagreed on with an average mean of 2.60, showing that they are not confident enough in their ability to use digital tools and technology for teaching their children. On the other hand, both the parents and the teachers are confident that incorporating innovative plans for online educational initiatives can contribute to reducing knowledge disparities among nursery and pre-elementary students. Which shows that they are being open minded when it comes to online educational plans for reducing knowledge disparities among the students. And that parental involvement is crucial for the success of online educational initiatives in nursery and pre-elementary education is being agreed on by the teachers with an average mean of 3.60, and disagreed on by the parents having the average mean of 2.40.

The general assessment shows an overall mean of **3.55** and a verbal interpretation of **Agree** for the teachers and a **2.68** overall mean with a verbal interpretation of **Disagree** for the parents. Where in this table shows that the adaptability of the teachers when it comes on having an online educational system for nursery and pre-elementary is far more adept at adapting than the parents.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents the summary of findings, conclusions drawn, and recommendations offered.

Conclusions

The "Enhancing Digital Literacy in Nursery and Pre-Elementary Programs: Developing a System through Innovative Plan for Online Educational Initiatives on Knowledge Disparities" offers valuable insights into digital literacy initiatives for nursery and pre-elementary education, presenting both agreed and differing viewpoints from the teachers and the parents. On one hand, the development of a user-friendly and efficient system tailored for young learners is commendable, signaling a step towards enhancing educational access and quality. The identification of challenges in accessing digital resources and assessing teachers and parents readiness underscores important areas for improvement and support, demonstrating a commitment to addressing underlying issues. Additionally, the proposal of innovative online educational initiatives shows promise in bridging knowledge disparities among young learners, offering potential solutions to longstanding educational inequalities.

However, there are concerns and differing viewpoints that warrant consideration. While the study's findings are promising, questions may arise regarding the applicability and sustainability of the proposed solutions in diverse educational contexts. Furthermore, while the proposed online initiatives show

potential, there may be skepticism regarding their effectiveness and scalability in real-world settings. Therefore, while the study emphasizes the importance of enhancing digital literacy in early childhood education, ongoing dialogue, collaboration, and critical evaluation are essential to ensure that initiatives are truly effective in meeting the diverse needs of all learners.

Recommendation

1. **For the School**
    - Develop a comprehensive digital literacy curriculum tailored for nursery and pre-elementary education.
    - Explain to parents properly about the online educational system then discuss thoroughly the benefits of the online educational system for students.
    - Create a user-friendly digital learning environment conducive to young learners' needs.
2. **For Teachers:**
    - Offer continuous training in digital teaching methods and incorporating technology.
    - Collaborate with colleagues to share best practices for integrating digital literacy into the curriculum.
3. **For Parents:**
    - Offer resources and guidance for supporting digital learning at home.

- Foster open communication between parents and teachers to stay informed and involved in their child's digital learning.

4. **For Students:**
    - Empower students to actively engage in digital learning and exploration.
    - Promote responsible and ethical use of digital resources, emphasizing digital citizenship and online safety.
5. **For Future Researchers:**
    - Further explore the impact of digital literacy initiatives on academic achievement and social-emotional development.
    - Investigate best practices for promoting digital equity and inclusion in early childhood education.

Future Scope

The future of early childhood education holds immense potential for transformative advancements through the integration of gamification techniques. By harnessing game-based learning approaches, educators can create dynamic and interactive learning environments that captivate and inspire young learners. A key area of focus for future research lies in the development of educational games and digital platforms precisely tailored to the unique needs and developmental stages of nursery and pre-elementary students. These innovative tools should not only align seamlessly with curriculum objectives but also foster the acquisition of essential skills and knowledge in a manner that is both enjoyable and engaging.

Moreover, the exploration of gamification's impact on student learning outcomes, encompassing academic achievement and problem-solving abilities among other key metrics, is paramount to understanding its effectiveness. Rigorous assessment and evaluation will be instrumental in gauging the true potential and benefits of integrating gamification into early childhood education.

Equally crucial is the provision of comprehensive training and ongoing support for educators to effectively implement gamification strategies in the classroom. Empowering teachers with the necessary skills and resources will be fundamental in ensuring the successful adoption and integration of gamified learning experiences into the educational landscape.

Furthermore, fostering collaboration among educators, game developers, and researchers will be essential for driving innovation and sharing best practices in the field of gamified learning. By leveraging collective expertise and insights, stakeholders can collectively advance our understanding of gamification's role in early childhood education and develop innovative solutions to address emerging challenges.

Ultimately, the integration of gamification techniques has the potential to revolutionize early childhood education, making learning a more enjoyable and effective experience for young learners while simultaneously preparing them for success in the digital age.

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APPENDIX B

Data Gathering Instrument

Survey Questionnaire

Dear Participants,

Thank you for participating in this study. Your insights are valuable for enhancing digital literacy in nursery and pre-elementary programs. Please answer the following questions honestly and to the best of your knowledge.

Name(optional): _____
Age(optional): _____
Occupation(optional): _____
Gender(optional): _____

Instruction: For each statement, please indicate your level of agreement or disagreement using the following scale. Place a check "/" mark in the box of your answer.

Strongly Disagree	Disagree	Agree	Strongly Agree
1	2	3	4

No.	Questions	1	2	3	4
1	Parental involvement in supporting digital literacy at home positively impacts a child's overall learning experience.				
2	The current digital literacy curriculum in nursery and pre-elementary programs is sufficient for fostering essential skills.				
3	I believe that integrating online educational initiatives can significantly improve the overall learning experience for nursery and				

	pre-elementary students.				
4	The available resources for digital literacy in early childhood education are adequately distributed and accessible.				
5	I feel confident in my ability to effectively use digital tools and technology for teaching in nursery and pre-elementary settings.				
6	I am confident that incorporating innovative plans for online educational initiatives can contribute to reducing knowledge disparities among nursery and pre-elementary students.				
7	I believe that parental involvement is crucial for the success of online educational initiatives in nursery and pre-elementary education.				
8	The current strategies employed to address knowledge disparities effectively cater to the diverse learning abilities of nursery and pre-elementary students.				
9	The time and effort invested in implementing digital literacy initiatives in early childhood education are justified by the educational benefits for students.				
10	Collaboration between teachers, parents, and educational institutions is essential for the successful implementation of digital literacy initiatives in nursery and pre-elementary programs.				

Thank you for your participation! Your input is valuable and will contribute to the improvement of digital literacy initiatives in nursery and pre-elementary education.

A. Personal Data

Name : Dejumo, Zuriel D.
Address : Brgy.Pansol Lopez, Quezon
Birthdate : February 20, 2004
Birthplace : Brgy.Pansol Lopez, Quezon
Gender : Male
Civil Status: Single
Nationality : Filipino

A. Educational Background

College : Polytechnic University of the Philippines Lopez Branch
2023-Present

Senior High School: Lopez National Comprehensive High School
2020-2022

Junior High School: Lopez National Comprehensive High School
2016-2020

Primary School : Pansol Elementary School
2010-2016

A. Personal Data

Name : Jessica Diana P. Geneblazo
Address : Brgy. Sta. Maria, Calauag, Quezon
Birthdate : April 8 2001
Birthplace : Calauag Quezon
Gender : Female
Civil Status: Single
Nationality : Filipino

A. Educational Background

College : Polytechnic University of the Philippines Lopez Branch
2023-Present

Senior High School: Lopez National Comprehensive High School
2017-2019

Junior High School: Bantulinao Integrated School
2013-2017

Primary School : Tabansak Elementary School
2007-2013