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Developing Digital Fluency in Early Education: Narratives of Elementary School Teachers

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Abstract:- In this qualitative phenomenological investigation, the experiences, coping strategies, and educational perspectives of eight elementary school teachers in Caraga North District, Division of Davao Oriental were explored as they foster digital fluency in early education. Identified themes from their experiences included difficulty in acquiring digital equipment, balanced screen time, and cultivated curiosity and exploration. Coping mechanisms employed by teachers involved enhancing digital skills, establishing partnership with the digital expert, and attending professional development and training. Educational insights encompassed tailoring an age-appropriate technology integration, fostering digital citizenship, and enhancing critical thinking skills. These findings underscore the diverse experiences and competencies required by teachers in imparting relevant digital knowledge to learners. Additionally, delving into teachers' experiences not only contributes to a nuanced comprehension of modern teaching demands but also offers valuable insights for both educators and educational institutions, potentially leading to enhancements in classroom management and teaching strategies in early education.

Keywords:- *Digital Fluency, Early Education, Elementary School Teachers, Davao City, Philippines.*

I. INTRODUCTION

A. The Problem and its Setting

Beyond traditional literacy constraints, primary school instructors are essential in helping young kids develop digital fluency in a world that is becoming increasingly digital. They recognize the need to teach children more than just how to use a device, and they strive to provide them the whole set of digital skills they need to succeed in today's connected world. Teachers help their students become astute consumers, law-abiding citizens, and creative thinkers in the digital world by guiding them through everything from navigating digital information to designing ethical digital places.

Leading the way in Taiwan in incorporating technology into classrooms smoothly are primary school teachers, aided by programs like the "Digital Education Action Plan" and curricular requirements. To promote critical thinking and problem-solving abilities, this method makes use of interactive software, online collaboration tools, and coding exercises (Ministry of Education, Taiwan, 2019). While collaborative and project-based learning models are in line with educational goals, professional development programs provided by organizations such as the National Academy for Educational Research further improve teachers' capacity to integrate technology (Lin, Tsai, & Chai, 2020).

Elementary school teachers in Germany are also supporting digital fluency programs like the "Digital Pact for Schools" and the "Education in the Digital World" plan. In line with national educational standards, educators foster critical thinking and digital literacy abilities by integrating digital tools, coding activities, and simulations (Kultusministerkonferenz, 2016). Opportunities for professional development offered by institutions such as the Deutsche Gesellschaft für Medien in der Wissenschaft give educators the know-how they need to successfully incorporate technology (Neuß & Richter, 2021). According to Weinberger et al. (2019), project-based learning strategies promote the real-world application of digital skills, equipping students for a world driven by technology.

Using instructional applications, interactive simulations, and online resources, Vietnamese elementary educators are at the forefront of incorporating digital fluency into early education. This helps pupils acquire the fundamental skills necessary for digital navigation. Teachers emphasize improving information literacy and encouraging responsible digital conduct through group projects and multimedia presentations, guided by the "National Digital Literacy Framework" (Ministry of Education and Training, 2020) (Nguyen & Le, 2019). These initiatives are meant to equip students for Vietnam's current process of digital transformation (Tran & Hoang, 2020).

In the Philippines, elementary school teachers play a crucial role in promoting digital fluency by ensuring that their students follow national measures such as the "Digital Education Transformation Roadmap" and the "K to 12 Basic Education Curriculum." As stated in the "Digital Citizenship Curriculum Guide" (Department of Education, 2019), instructors can help students become responsible digital citizens by incorporating digital tools and encouraging critical thinking. According to research, digital content production and collaborative learning are two powerful tactics for fostering digital literacy and ensuring that students are ready for a future that is heavily reliant on technology (Manzano, 2018).

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24JUN1943

Locally, primary school instructors in Davao Oriental, Philippines' North District deal with a variety of difficulties and encounters when promoting digital fluency. The purpose of this study is to investigate these stories in order to reveal the various aspects of their experiences, including the influence on the intellectual and emotional development of young students. By making these efforts, educators hope to improve the teaching profession, overcome obstacles, and develop students who are capable of using technology and will be successful in the future.

B. Research Questions

The goal of the study is to learn about the perspectives and experiences of elementary school teachers in promoting digital fluency in early childhood education. The study specifically aimed to respond to the following queries:

- What are the experiences of elementary school teachers in developing digital fluency in early education?
- How do elementary school teachers cope with challenges in developing digital fluency in early education?
- What educational management insights gained are drawn from the experiences of the informants?

C. Theoretical Lens

In order to investigate how digital fluency develops in early education, this study draws on an array of fundamental theories. The research highlights how collaborative digital activities within supportive environments contribute to young learners' digital fluency. It is based on Lev Vygotsky's Sociocultural Theory (1978), which emphasizes the relevance of social interactions and cultural contexts in cognitive development. The zone of proximal development, as proposed by Vygotsky, argues that children acquire digital skills more quickly when they are guided by peers or educators in tasks that are just a little bit above their existing capabilities.

Constructivist theory, developed by Jean Piaget in 1967, emphasizes learning as an active process of creating knowledge via one's own experiences and interactions with the outside world. This theory sheds light on how young learners actively interact with technology, take in new knowledge, and gradually improve their mental models of digital concepts when it comes to digital fluency. Educators can create digital learning experiences that are developmentally appropriate for children by having a better understanding of these cognitive processes.

Albert Bandura's Social Learning Theory (1977), which emphasizes learning by imitation, social factors, and observation, also adds another layer. According to Bandura's thesis, children pick up digital abilities through watching and copying peers and adults in the context of developing digital fluency. Furthermore, positive reinforcement and successful digital experiences are key to building children's conviction in their own digital capabilities, as highlighted by Bandura's idea of self-efficacy. With the help of social interaction, active learning, and the development of self-efficacy, these theoretical stances together provide solutions for fostering digital fluency in early education and encouraging holistic development.

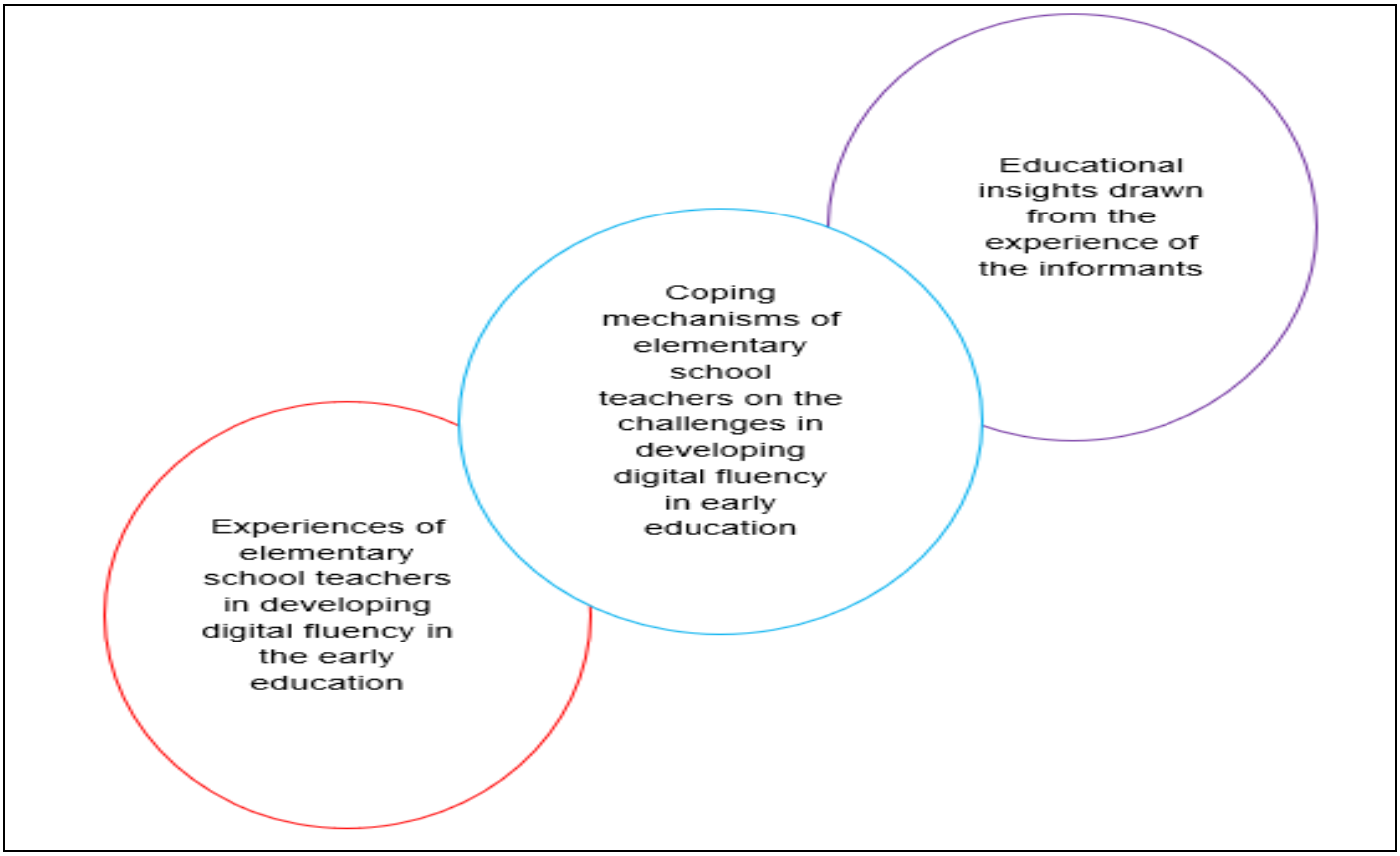

Fig 1 Conceptual Framework of the Study

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24JUN1943

The conceptual framework of the study is presented in figure 1. Based on the figure, there are three interconnected variables. These variables are the (1) Experiences of elementary school teachers in developing digital fluency in early education; (2) coping mechanisms of elementary school teachers on the challenges in developing digital fluency in early education; and (3) Educational insights drawn from the experiences of the informants.

II. METHOD

A. Design and Procedure

This study employed a phenomenological research methodology, which is a qualitative method that seeks to comprehend the fundamental nature of lived experiences within a particular group, as described by Creswell (2012). Phenomenology entails collecting data largely through conducting interviews with individuals who possess direct experience and understanding of the topic being studied. This is further supported by the use of documents, observations, and other types of data. The technique entails iterative examination and scrutiny of gathered data to discern noteworthy phrases and themes, which are subsequently categorized into clusters of meanings to unveil the fundamental essence of the experience. This methodological technique, based on philosophy and psychology, seeks to obtain unbiased and uncontaminated data by setting aside the researcher's personal experiences and biases. This enables a more profound comprehension of the subjective viewpoints of the participants.

Moreover, Corbetta (2003) highlights that phenomenology research places great importance on conducting in-depth interviews as a method to obtain significant insights and explanations from participants. This approach allows researchers to gain a comprehensive understanding of the subjective perspectives of the participants. Interviews play a vital role in qualitative research by delving into key themes and meanings within participants' experiences, with a specific emphasis on comprehending the importance of their stories (McNamara, 1999). The researcher in this study conducted extensive interviews to collect data from instructors who were going through the process of developing digital fluency in early education. The researcher used triangulation to evaluate and interpret the important statements obtained from these interviews. The phenomenological method enabled the creation of detailed descriptions of both the texture and structure of the experience. This technique allowed for a nuanced comprehension of how teachers perceive and handle the difficulties and achievements in promoting digital fluency among young students.

B. Research Participants

Qualitative research generally utilizes smaller sample sizes in comparison to quantitative studies, with the goal of reaching saturation, a point at which more participants no longer provide fresh viewpoints or information (Glaser & Strauss, 1967). When conducting phenomenological investigations, Creswell (1998) says that the sample size should be between five and 25 individuals, while Morse (1994) advises a minimum of six participants. Sample size in qualitative research is not determined by rigid principles. Instead, factors such as time constraints, available resources, and study objectives have significant influence (Patton, 1990). This study involved the deliberate selection of eight elementary school teachers from Caraga North District, Division of de Oro. The selection was based on specified criteria, including being an elementary school teacher, having at least five years of teaching experience, and possessing expertise in establishing digital fluency. The researchers used purposive sampling to guarantee that the outcomes of the study were both genuine and pertinent to its objectives (Creswell, 2014; Marshall, 1996).

C. Data Analysis

This study utilized thematic analysis to examine the data obtained from interviews with participants, using Creswell's Model and the approach of discovering themes (Creswell, 2012). The researcher thoroughly engaged with the data by familiarizing herself with it, coding it, and searching for themes. This approach ensured that each phase caught both the literal and abstract meanings of the data. Thematic Content Analysis was employed to offer a comprehensive portrayal of each subject, discerning the fundamental nature of each and formulating succinct labels (Andersen, 2013). The study's validity was further improved by the use of Environmental Triangulation, which involved examining the results in several locations and conditions to verify consistency (David, 2015; Naeem & Saira, 2019). The concluding stage entailed composing a comprehensive analysis that presents a logical and compelling narrative situated within the framework of current scholarly works.

D. Analytical Framework

The utilization of framework analysis in this research provided adaptability for the collection and analysis of data, encompassing a five-step procedure: becoming acquainted with the data, establishing a thematic framework, categorizing, organizing, and interpreting the data (Ritchie & Spencer, 1994). The researcher became acquainted with the data by thoroughly examining transcripts, audiotapes, and notes in order to find significant themes. The process of identifying a thematic framework involves using these themes as a foundation for filtering data. Indexing entailed the process of categorizing data segments that corresponded to specific topics. The indexed data was charted, and the charts were processed using mapping and interpretation to provide a schematic picture of the phenomena. This procedure guaranteed that the results accurately represented the genuine attitudes, beliefs, and values of the participants.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24JUN1943

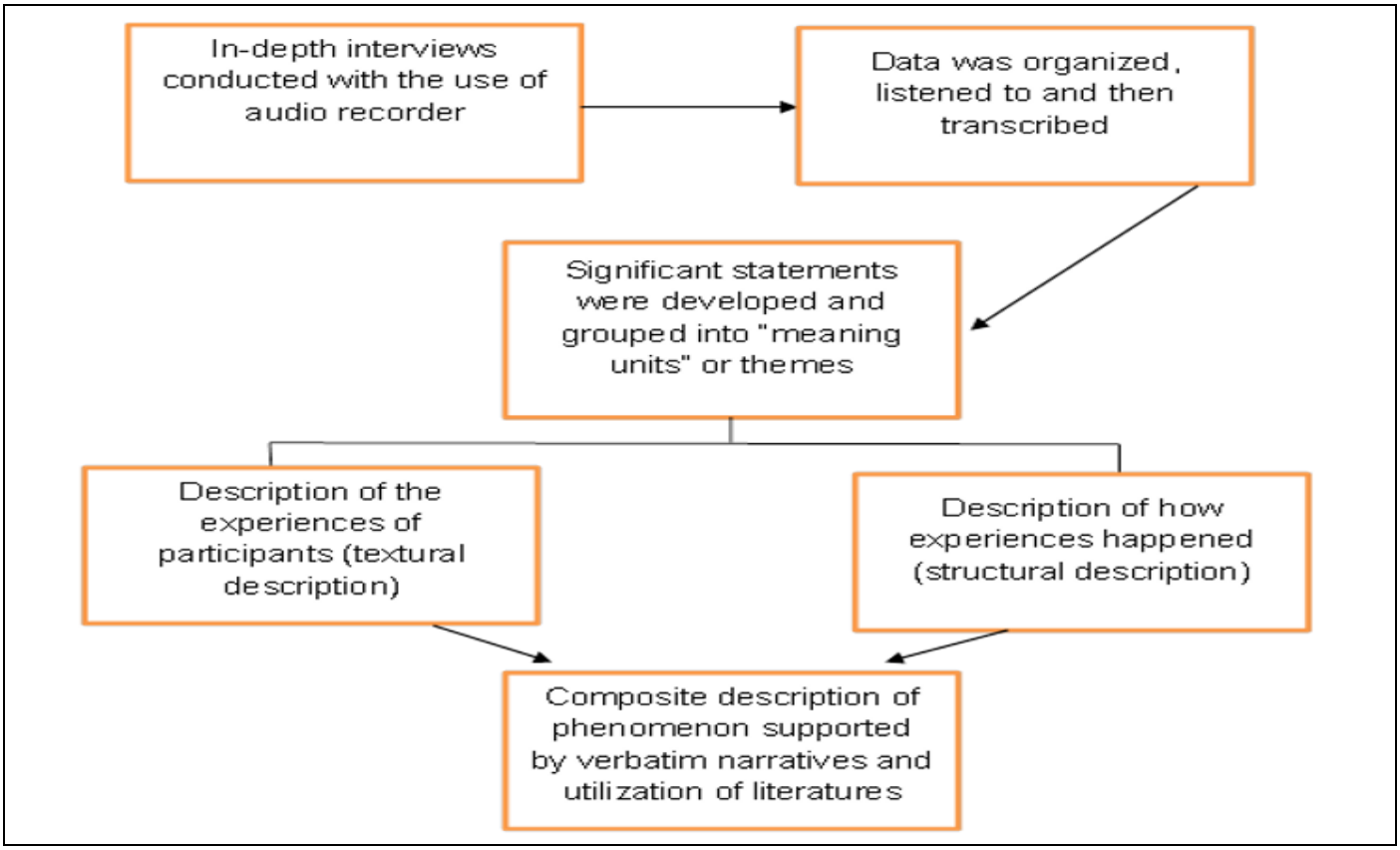

Fig 2 Analytical Framework of the Study

E. Ethical Considerations

This research inquiry implemented substantial ethical concerns to guarantee the integrity and genuineness of the findings. The study prioritized the social significance by specifically examining the experiences of elementary teachers. Its objective was to provide valuable insights to higher authorities in order to develop advantageous programs. Voluntary involvement and transparency regarding the study's goal were ensured through the acquisition of informed permission, in accordance with McLeod's (2009) Treaty Principle of involvement. The privacy and confidentiality of the participants were protected by using pseudonyms and adhering to the regulations outlined in the Data Privacy Act of 2002. The study took measures to reduce risks and guarantee the confidentiality of participants, in line with the Treaty Principle of Protection (Walker, 2007; Pillerin, 2012). The researcher's credentials and the sufficiency of the facilities were considered to ensure the successful completion of the investigation. The community's active participation was highly valued, and there was a strict adherence to ethical principles in recruiting participants and collecting data, with no manipulation or deception involved. To maintain academic integrity, the researcher adhered to ethical standards by accurately referencing sources and assuring the truthful depiction of data (Ritchie & Spencer, 1994).

III. RESULTS AND DISCUSSION

A. Experiences of Elementary School Teachers in Developing Digital Fluency in Early Education

Elementary school teachers' inventive and passionate attempts to educate young learners for a digital future are shown in their digital fluency efforts. Beyond technical skill, educators use digital tools and tactics to teach critical thinking, ethical digital behavior, media literacy, and creative expression as technology changes communication, work, and learning. Teachers equip students to navigate the digital world with interactive educational software, online collaborative platforms (Ministry of Education, Taiwan, 2019), educational apps, coding activities, and simulations (Williams & Brown, 2018; Chen et al., 2020). They show their passion through professional growth (Neuß & Richter, 2021; Professional Educators' Association, 2022). These efforts create a generation of digital citizens with the skills and mindsets to flourish in a changing environment.

After the interviews, the themes found are: 1) Difficulty in acquiring digital equipment, 2) Balanced screen time, and 3) Cultivated curiosity and exploration.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24JUN1943

Theme #1: Difficulty in acquiring digital equipment. Elementary school teachers faced numerous obstacles in their efforts to promote digital fluency in early education, especially when it came to purchasing necessary digital equipment. The process of obtaining required tools and resources was frequently hampered by bureaucratic obstacles and a lack of funding, forcing educators to defend the value of technology in the face of conflicting financial demands from the educational system (Clark & Carter, 2019). This problem also brought to light issues with equitable access, which inspired educators to come up with innovative solutions to make sure all students had access to technology, like assigning pupils to different devices on a rotational basis or asking for outside donations (Gomez et al., 2020).

Despite these obstacles, educators shown tenacity and flexibility by making use of readily available digital resources, recycling pre-existing hardware, investigating open-source software, and involving students in cooperative projects that required little in the way of technology (Martin & Robinson, 2018). Their experiences demonstrated a strong dedication to provide captivating digital learning opportunities and powerfully communicated the idea that the benefits of digital education outweighed the difficulties in ensuring students acquired the skills they needed to succeed in a technologically advanced environment.

- *Here are the Transcripts:*

Acquiring digital equipment for early education posed a significant challenge in my experience. Limited school budgets made it difficult to access the latest technology needed to enhance digital fluency in the classroom. (P1)

Developing digital fluency in early education became a hurdle due to budget limitations. It was a struggle to secure the necessary digital tools to keep pace with the evolving educational landscape. (P4)

The challenge of acquiring digital equipment for early education stemmed from the rapidly changing landscape of educational technology. Keeping up with the evolving needs required constant adaptation and resourcefulness. (P7)

The journey towards digital fluency in early education was hindered by the challenge of acquiring essential equipment. Through strategic planning and persistence, I managed to build a digital learning environment that empowered my students despite the initial constraints. (P8)

Theme #2: Balanced screen time. Teachers found it extremely difficult to successfully balance screen time while attempting to develop digital fluency in early education students. While the use of digital tools opened up new learning opportunities, teachers struggled to strike a balance between technology-based learning activities and conventional teaching techniques. According to research by Radesky et al. (2016), excessive screen time may have an adverse effect on attention spans and face-to-face interactions, hence it is important for early childhood educators to use technology with mindfulness. In response to these worries, educators created lesson plans that struck a balance between digital assignments and practical exercises, outdoor play, and social engagement, with the goal of enhancing learning through technology rather than depending entirely on it.

Controlling screen time required using innovative techniques, like combining online and offline group projects with digital work, as seen in Chen and Anderson's practices (2019). This strategy not only allayed worries about excessive screen time, but it also made it easier to use digital abilities in real-world situations. A significant contribution was also made by proactive parent engagement in accordance with Kabali et al. (2015)'s recommendations. In order to match classroom procedures with parents' preferences and worries about screen time, educators promoted open communication. They also arranged workshops where participants could exchange ideas and work together to create techniques for positive digital engagement at home and in the classroom.

- *Presented below are the Transcripts:*

Striking a balance in screen time while fostering digital fluency in early education demanded a mindful approach in my classroom. This ensured that screen time was purposeful, engaging, and seamlessly integrated into the broader learning experience. (P2)

Achieving balanced screen time in early education required setting clear guidelines. I established structured routines that alternated between screen-based activities and hands-on learning. (P3)

Balancing screen time in the development of digital fluency involved emphasizing active participation. I designed activities that encouraged students to interact with digital content rather than passively consume it. (P5)

Achieving a balanced approach to screen time required collaboration with parents. I actively communicated with families, providing insights into the digital activities incorporated into the curriculum and encouraging similar guidelines at home. (P6)

Theme #3: Cultivated curiosity and exploration. Teachers have accepted a journey to develop digital fluency by utilizing and fostering the natural curiosity and adventurous character of young learners in the ever-changing field of early education. This method, which is based on constructivist learning theories, aims to take use of kids' innate curiosity and desire to learn about and make sense of the world. The cultivation of curiosity and exploration in digital education has had a profoundly transforming effect on teachers' teaching techniques and student involvement.

Motivated by Piaget's (1952) focus on curiosity in cognitive development, educators have endeavored to establish settings that pique students' curiosity and promote investigation of digital resources and ideas. Echoing the findings of Ching et al. (2015) on the power of digital platforms, collaborative digital projects like online treasure hunts and virtual field excursions have arisen as creative tactics that not only boost technological competency but also foster inquiry-based learning.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24JUN1943

In order to promote exploration, educators have also made use of interactive digital tools including dynamic webpages, instructional apps, and simulations. According to Lamb et al. (2011), these tools allow for interactive participation in mathematical problem-solving, scientific investigation, and creative expression in virtual worlds. Instructors now know how critical it is to stimulate students' digital inquiry while striking a balance between their independence and structure and direction. With the use of digital portfolios and other technologies, students record their findings and reflect Vygotsky's (1978) sociocultural theory as teachers raise questions and lead conversations to pique students' interest and promote deeper learning.

The stories shared by educators demonstrate a change from the traditional dissemination of knowledge to a role of facilitation that fosters students' learning autonomy. Experiences with fostering inquiry and discovery in digital education point to a setting in which technology acts as a catalyst to change the way that knowledge is taught. Young people actively participate in their learning journeys in this dynamic setting, which cultivates a desire for lifelong learning in the digital age.

- *Here are the Statements of the Participants:*

Cultivating curiosity in early education for digital fluency became an exciting journey. I integrated interactive digital adventures that sparked curiosity and encouraged exploration. (P1)

Nurturing digital fluency while cultivating curiosity involved empowering students to embark on independent discovery. I curated a digital environment where they could explore educational apps and platforms at their own pace. (P3)

Fostering digital fluency in early education was a journey of unleashing inquisitive minds in the digital realm. I curated a space where students could ask questions, delve into interactive digital content, and explore topics of interest. (P6)

Guiding students through a world of digital exploration, my approach to developing digital fluency in early education focused on structured yet curiosity-driven activities. (P8)

B. Coping Mechanism of Elementary School Teachers on the Challenges in Developing Digital Fluency in Early Education

Using creative problem-solving techniques, primary school teachers surmounted a variety of obstacles on their path to helping young students become digitally fluent. Based on Bandura's self-efficacy theory (1977), teachers implementing technology in early education have to be flexible and resilient. They overcame problems like students' differing levels of comfort with digital tools and technical difficulties by using strategic problem-solving techniques. Teachers who participated in collaborative peer learning communities were able to reflect on Bandura's social learning theory (1977) and increase their self-efficacy in addressing digital difficulties by exchanging experiences and working together to discover solutions. Furthermore, educators actively sought out options for professional development, including workshops and online courses; this is consistent with research that highlights the significance of efficient training in enabling educators to confidently mentor students in their digital exploration. Their efforts to promote digital fluency have had a transformative effect, as demonstrated by their simultaneous focus on improving teacher skills and increasing student involvement.

The themes outlined are: 1) Enhancing digital skills, 2) Establishing partnership with digital experts, and 3) Attending professional development and training.

Theme #1: Enhancing digital skills. The development of digital fluency in early education presented elementary school teachers with a variety of difficulties that required creative problem-solving techniques. In line with Bandura's self-efficacy theory (1977), a critical strategy that surfaced was improving digital skills, which allowed teachers to empower students and manage the digital environment. As an example of their dedication to successful digital teaching, this proactive move increased teachers' self-assurance and technological proficiency in the classroom.

Given the ever-changing nature of technology, educators participated in professional development exercises to strengthen their digital competencies. Darling-Hammond et al. (2017) have noted that educators can acquire skills and knowledge for using digital technologies and platforms by attending specialized seminars, online courses, and educational conferences. By strengthening teaching strategies and improving the learning environment, excellent professional development helped close the gap between traditional education and contemporary technological breakthroughs.

Moreover, self-directed learning's importance in improving digital competency was highlighted by the experiences of primary school teachers. Accepting internet tools, learning portals, and tutorials in line with adult learning theory (Knowles, 1984), as educators assumed accountability for their own growth customized to meet particular needs. The formation of online and offline communities of practice by educators to share best practices, gain insights, and fix problems together was another important factor in collaboration. Teachers' digital abilities were improved, and they provided an example of successful information sharing and problem-solving for their students in a supportive setting that was in line with Vygotsky's social constructivism (1978).

- *Below are the Transcripts:*

Enhancing digital skills for promoting digital fluency in early education required a coping mechanism centered around continuous learning. I actively sought professional development opportunities, attending workshops and courses to stay updated. (P1)

Coping with the demand to enhance digital skills involved fostering a collaborative environment. I engaged in knowledge-sharing sessions with colleagues, exchanging insights and best practices related to digital fluency. (P4)

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24JUN1943

As the need for digital fluency grew, my coping mechanism revolved around hands-on experimentation. I dedicated time to explore new digital tools independently, experimenting with their functionalities before introducing them to the students. (P7)

Coping with the demand to enhance digital skills was facilitated through a student-centric approach. I adopted a mindset of learning alongside my students, using their enthusiasm for technology as motivation. (P8)

Theme #2: Establishing partnership with the digital expert. Elementary school teachers faced a wide range of challenging obstacles in their quest to foster digital fluency in early education. These obstacles drove the creation of creative coping strategies, such as forming alliances with digital professionals. Through the utilization of technology-savvy persons, teachers were able to overcome obstacles and enhance their students' educational experiences. Vygotsky's sociocultural theory (1978), which emphasizes how knowledge and abilities are developed through interaction with more informed persons, was exemplified by this partnership.

Teachers actively sought out professional advice from digital experts after realizing their own shortcomings in specific areas of digital fluency. These experts, who were well-versed in technology, provided advice on how to choose tools, solve problems, and create interesting learning activities. Their advice was in line with the focus on efficient professional development placed by Darling-Hammond et al. (2017). Through seminars, discussions, and cooperative projects, the partnership promoted continuous learning and skill development while adhering to the concepts of contextual learning (Lave & Wenger, 1991). Instructors worked with digital professionals on real-world projects while progressively assimilating novel strategies that promoted the growth of digital fluency.

Additionally, this cooperative method was used in the classroom, where digital specialists co-facilitated courses to show creative technology integration with educational significance. In addition to boosting teachers' self-esteem, this experiential learning helped them establish themselves as digital role models for pupils, demonstrating adaptability and ongoing learning in the digital age.

- *Here are the Transcripts:*

Establishing partnerships with digital experts became a vital coping mechanism in my journey toward digital fluency in early education. By collaborating with tech specialists, I gained valuable insights into the latest educational technologies and effective implementation strategies. (P2)

Coping with the complexities of digital fluency involved building a supportive network that included digital experts. I cultivated relationships with specialists who could offer guidance and mentorship. (P3)

My coping mechanism for enhancing digital fluency was anchored in establishing partnerships with digital experts through professional development initiatives. Collaborating with specialists in workshops and training sessions allowed for a targeted and personalized approach to improving my digital skills. (P5)

As I navigated the journey of digital fluency, my coping mechanism involved actively participating in interactive workshops and seminars facilitated by digital experts. (P6)

Theme #3: Attending professional development and training. Teachers in elementary schools are discovering that professional development and training are essential coping mechanisms as they manage the challenges of helping young learners become digitally fluent. Acknowledging the swift advancement of technology in the field of education, teachers proactively seek out chances to improve their digital competencies and instructional strategies. By participating in focused professional development activities like conferences, online courses, and workshops, educators can stay up to date on the newest developments in digital tools and teaching methodologies. As per Darling-Hammond et al. (2017), proficient professional development not only bolsters educators' ability to address intricate problems but also validates Bandura's self-efficacy theory (1977) by elevating their self-assurance in maneuvering through the digital terrain.

Through direct interaction with educational apps, interactive platforms, and collaborative tools, professional development takes a hands-on approach to helping educators get a greater knowledge of how technology may improve learning experiences. This method of experiential learning emphasizes learning through meaningful interaction, which is consistent with Vygotsky's sociocultural theory (1978). Teachers can better adapt technology integration to meet the developmental requirements of their pupils by actively using digital tools. Professional development initiatives are further enhanced by cooperation among communities of practice. By means of comprehensive dialogues and the sharing of optimal methodologies, educators utilize Wenger's social learning theory (1998) to collaboratively generate knowledge and devise efficacious approaches for surmounting obstacles in the realm of digital fluency education.

- *Presented below are what the Participants said:*

Coping with the imperative to develop digital fluency in early education, my coping mechanism centered on attending continuous professional development and training. These opportunities empowered me with the latest insights and methodologies, ensuring that I remained at the forefront of digital education. (P1)

As digital fluency evolved, attending professional development and training sessions became my strategic coping mechanism. Engaging in these opportunities allowed me to stay informed about emerging tools and trends. (P3)

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/IJISRT24JUN1943

Coping with the evolving landscape of digital fluency involved attending professional development to tailor learning experiences to individual student needs. These sessions equipped me with personalized strategies for addressing diverse learning styles and abilities. (P6)

Coping with the demand for digital fluency in early education was enhanced by attending professional development that inspired a collaborative culture. Engaging in these sessions fostered a sense of community among educators, where we shared experiences, learned from one another, and collectively navigated the complexities of digital integration. (P8)

C. Insights Drawn from the Experiences of Elementary School Teacher in Developing Digital Fluency in early Education

The significance of preserving a balanced integration of technology has been underlined by elementary school teachers' experiences in developing digital fluency among early education learners. Teachers understand that although digital tools present special chances for participation and education, screen-based activities must be complemented by practical experiences, group discussions, and outdoor play. This strategy, which is backed by research by Radesky et al. (2016), places an emphasis on technology use that is mindful in order to foster holistic development and lessen the possible negative effects of excessive screen time. Teachers build a holistic learning environment that fosters digital fluency and important life skills by merging technology with traditional teaching methods.

Additionally, teachers in elementary schools have had success integrating inquiry-based, student-centered methods to digital teaching. Encouraging students to take charge of their own education by letting them experiment with digital tools, work together on projects, and solve real-world issues develops their critical thinking, autonomous problem-solving abilities, and curiosity. According to Chen and Anderson (2019), this method is consistent with constructivist theories and highlights the advantages of student participation in improving digital abilities. Educators that take on the role of facilitator assist students in navigating the digital environment while encouraging a sense of agency and accountability for their educational path.

The researcher has generated these themes: 1) Tailoring an age-appropriate technology integration, 2) Fostering digital citizenship, and 3) Enhancing critical thinking skills.

Theme #1: Tailoring an age-appropriate technology integration. The knowledge acquired from primary school educators tackling the difficulties of promoting digital literacy in early childhood education highlights the vital requirement for development of age-appropriate digital integration techniques. Teachers now know that the digital resources they choose must fit the interests, cognitive capacities, and learning preferences of their pupils. In order to provide relevant and captivating learning experiences that support young learners' digital fluency, Kabali et al. (2015) stress the need of this alignment.

Educators also stress how critical it is to continue integrating technology in a balanced manner. Though educators have noted the possible negative effects of excessive screen usage on holistic development, digital tools do provide compelling learning opportunities. Teachers may guarantee that technology complements full educational experiences rather than replaces them by incorporating digital activities with hands-on learning, physical play, and social connections. This methodology is consistent with studies conducted by Radesky et al. (2016), which emphasize the value of thoughtful technology usage in early education to promote development of the whole child.

It also entails creating learning experiences that encourage inquiry, discovery, and student agency. Age-appropriate digital integration goes beyond simply choosing the right tools. With its foundation in constructivist pedagogies, this method promotes teachers to incorporate technology into collaborative activities, project-based learning, and creative expression. Teachers can increase student engagement and assist students in achieving digital fluency by using digital technologies in this way.

- *Here are the Transcripts:*

It is important to select digital tools that align with the cognitive, motor, and socio-emotional development of each age group. This approach ensured that technology complemented and enhanced the natural progression of skills, fostering a seamless integration into the curriculum. (P1)

I focused on building a scaffolded approach to technology integration. Starting with simple and intuitive applications, students built foundational skills before advancing to more complex technologies. This scaffolded approach ensured a supportive and progressive learning experience. (P4)

I carefully selected digital tools that directly supported the curriculum, enhancing lesson outcomes and engaging students in meaningful ways. This intentional alignment ensured that technology served as a valuable tool for achieving educational goals while developing digital fluency. (P7)

To promote digital fluency while considering age appropriateness, I incorporated interactive and playful elements into technology integration. This approach ensured that technology was not only a learning tool but also a source of enjoyment, fostering a positive attitude toward digital fluency in early education. (P8)

Theme #2: Fostering digital citizenship. It has become evident how crucial it is to promote digital citizenship from the experiences of elementary school teachers who are struggling to develop digital fluency in early education. According to Ching et al. (2015), this entails encouraging the ethical and responsible use of technology, imparting knowledge on online safety, digital etiquette, and rigorous analysis of digital content. Teachers can better equip students to navigate the digital world with integrity and judgment by

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including these teachings into their classes, which also help them become ready for the complexity of online interactions.

Also, educators stress how critical thinking abilities are developed in order to promote digital citizenship. In keeping with studies on inquiry-based learning in digital environments, teaching students to explore, evaluate, and validate information they come across online fosters skepticism and intellectual curiosity (Ching et al., 2015). Also, educators emphasize how critical it is to foster polite communication and empathy in digital environments (Bandura, 1977). Instructors foster a healthy digital culture in which students are able to interact, cooperate, and positively impact their online communities by modeling and promoting positive online behavior, such as kindness and empathy. These initiatives serve to establish a conducive atmosphere for digital interaction and learning while also embodying social learning principles.

- *Presented below are the Transcripts:*

Fostering digital citizenship was an integral part of my educational management strategy, achieved through engaging students in collaborative digital projects. By working together on shared online platforms, students learned the principles of teamwork, digital communication, and the value of collaboration. (P2)

I demonstrated positive online conduct, showcasing how to communicate respectfully, critically evaluate information, and navigate digital spaces safely. By serving as a role model, I aimed to shape students' understanding of responsible digital citizenship through direct observation and emulation. (P3)

My educational management insight focused on fostering digital citizenship through interactive discussions on online safety. These discussions empowered students to make informed decisions, ensuring that they understood the importance of safeguarding personal information and navigating the digital landscape responsibly. (P5)

I integrated lessons on online manners, emphasizing the importance of respect, kindness, and responsible behavior in the digital world. This proactive approach aimed to instill a foundation of positive digital citizenship from the earliest stages of digital fluency development. (P6)

Theme #3: Enhancing critical thinking skills. Teaching students to think critically is essential, as evidenced by the perspectives of primary school instructors tackling the issues of digital fluency (Ching et al., 2015).. In addition to teaching students' technical proficiency, this requires educating them to critically analyze, assess, and validate digital content in order to separate fact from fiction. By encouraging children to learn via inquiry, teachers enable them to make wise choices and successfully negotiate the challenges of the digital age.

It is the belief of educators that encouraging inquiry and curiosity can improve students' critical thinking abilities (Ching et al., 2015). Buildivist theories are in line with the idea that promoting critical thinking and the exploration of different viewpoints among students enhances their digital experiences. Teachers also help kids prepare to interact wisely and morally in the digital world by facilitating conversations about digital ethics and appropriate online conduct (Ribble, 2015). A comprehensive approach to teaching digital citizenship is fostered by these initiatives, which combine ethical and critical thinking.

- *Here are the Participants' Statements:*

I integrated digital platforms that presented age-appropriate challenges, encouraging students to analyze, strategize, and find creative solutions. This approach not only developed their digital fluency but also nurtured a foundation for robust critical thinking. (P1)

I worked to enhance critical thinking skills through interactive problem-solving activities. By integrating digital platforms that presented real-world scenarios, students were encouraged to analyze, evaluate, and devise solutions collaboratively. (P3)

Enhancing critical thinking skills involved incorporating a diverse range of digital content for analysis. The students developed the capacity to critically assess digital content, distinguishing between reliable and unreliable sources, thus fostering a discerning approach to information consumption. (P6)

Through online platforms, students engaged in discussions that encouraged them to express their thoughts, listen to diverse perspectives, and construct well-reasoned arguments. The students were able to develop effective communication skills and the ability to think critically about various viewpoints, promoting a more inclusive and thoughtful learning environment. (P8)

IV. IMPLICATIONS AND FUTURE DIRECTIONS

A. Implications

The inquiry yielded noteworthy findings regarding the efforts of elementary school teachers in promoting digital fluency in early education. Several themes arose about the problems they encountered: the struggle to obtain digital equipment, the necessity of managing screen time to prevent negative consequences such as decreased in-person connections, and the endeavor to foster student curiosity and engagement with digital tools and concepts. One coping method was to improve digital abilities through intentional professional development, enabling educators to effectively navigate the digital ecosystem. Another approach entailed establishing collaborations with digital specialists who provided expert advice on tool selection and the creation of captivating digital learning experiences.

Educators also stressed the significance of incorporating technology that is suitable for the age of the kids, using tools that correspond with their cognitive capacities and preferred methods of learning. The development of digital citizenship was emphasized through the instruction of digital etiquette, online safety, and critical evaluation of digital content. The objective was to cultivate responsible attitudes towards

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technology among students. Finally, the development of critical thinking abilities has been identified as essential, as it allows students to assess online content in a discerning manner and make well-informed choices in the digital domain. These observations emphasized the educators' dedication to thoroughly equipping young students with the necessary skills and knowledge to navigate the intricate digital landscape.

B. Future Directions

Examining the experiences of teachers in developing digital fluency provides valuable insights into the challenges faced in early school settings and offers suggestions for effective future strategies. This encompasses focused professional development for educators, extensive digital literacy curricula, partnerships with technology specialists, and incorporation of digital fluency into wider educational policies. Teachers can improve their digital fluency by engaging in ongoing professional development, working together with colleagues, including interactive lesson plans, and actively involving parents in the process of digital education. These initiatives enable instructors to have a crucial impact in promoting digital literacy and academic achievement in early education.

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