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Parental Involvement in Digital Learning: Mother's Experiences of Elementary School Students

Abstract—After the implementation of the school closure policy, parents are acclimating to studying with their children due to the effects of COVID-19 pandemic. Therefore, this study thoroughly discusses the involvement of parents in a child's digital education, especially the experience of the mothers with elementary school students. The survey approach and qualitative methods are used to obtain 277 respondents from the population of parents in Berau, Indonesia. Structural Equation Model (SEM) and Partial Least Square (PLS) are the data analysis technique used with the help of SmartPLS software version 3. The results shows that the direction of the relationship between the use of gadgets and maternal involvement is positive, hence the hypothesis decision is accepted. The digital learning of children includes letter and number recognition, reading, learning to count, coloring, drawing, playing educational games, and studying. Some of the mothers' involvement includes explaining websites accessible by children to communicate politely on social media. These results are valuable insights for parents in providing involvement in digital learning for elementary school students.

Keywords—digital learning, elementary school, mother's experience, parental involvement, students.

1 Introduction

Community and school learning activities are expected to continue even though the pandemic has not been cured, and multiple groups are collaborating to restore the educational system. The pandemic brought rapid changes in various areas, including education, thereby forcing people to learn adaptively through digital technology instruments [1]. Technology was also used as one of the priority issues in the 2022 G20 on Education and Culture forum. Digital technology in education is about the physical contribution as a learning tool and multidimensional concept [2]. Using technology for learning should also be followed by a transformation of patterns by teachers and students [3], [4]. However, the digital teaching method gap creates new habits that allow learning. The normally bustling education industry came to an abrupt halt, forcing reform across the board, including new approaches to teaching, course design, and curriculum delivery [5].

Presenting digital learning for teachers, educators, and students requires interference from various parties. Different steps from the Ministry of Education encourage the creation of learning platforms that function as aggregators of e-Learning and e-Administration services [6]. Furthermore, the use of technology in education is on the rise but still needs constant refinement. The culture of using information technology or digital transformation is not easy [7]. Children entering the internet are like explorers venturing into uncharted territory. Therefore, it is necessary to have a culture of healthy utilization to use the internet as a learning resource and support the child's learning process

[8].

The approach to learning is starting to change since it is student-centered. Children are digital natives who use technology [9], and should continue learning about various applications through communication channels. Additionally, effective and efficient tools are expected to optimize the various digital spaces provided for the interaction of teachers and children. As a result, children become more enthusiastic, creative, and critical in selecting information to develop new ideas not previously found in conventional learning [10], [11]. The development of digital learning focuses student on playing games while lacking sensitivity to the surrounding environment and social relationships. This sums up the state of modern-day childhood, especially regarding schooling. Usually, they are more focused on learning to prepare for a better future, and develop the capacity for abstract thought.

However, children in the modern digital age are carried away by technology, leading to a reluctance to accept responsibility, moral decline, and increased crime [12]. It happens because of the ease of accessing information and communication using technology through online social media pages. It is also a common problem that allows children focus more on this technology circle than on learning [13]. Complex problems affect the educational process, and the digital learning culture should have various stimuli [11]. To help children at home, parents need to provide guidance, instruction, understanding, cooperation, and supervision. Meanwhile, parents should control and supervise every activity and information received through digital media and provide excellent and appropriate explanations [14]. Proper parental modeling is needed to use technology in children to construct knowledge and support learning [15].

Parental involvement is the spearhead of students' attitudes or behaviors in responding to digital learning. It becomes essential because engagement influences communication patterns and interactions [16]. The involvement in this digital model has a severe impact on the growth of children. One of the negative impacts experienced by students who use technology without parental supervision is moral degradation. The use of information technology is not balanced by noble ethical values in the real world [17]. Children are especially vulnerable to the long-term consequences of exposure to unregulated substances. Parents are tasked with accompanying and directing them in using technology to manage the negative impact.

Based on the observations, the nature of parental involvement, especially for mothers, has undergone relative changes in the education sector. Schools are starting to view this as an opportunity in children's education after the Covid-19 pandemic [18]. The involvements are expected to play a significant role in the past and are getting used to directly assisting children in learning after the school closure policy in 2020-2021. However, many parents encounter obstacles in this mentoring activity, such as managing children's learning and playing time [19].

Mothers will be extra helpful to children in preparing all learning media to support the learning process and overcome all kinds of problems. Meanwhile, problems arise due to the absence of direct assistance from the teacher. Mothers are responsible for explaining the lessons taught in school, and their children can pick up and retain every piece of information [20]. This can be conducted by (1) choosing features on gadgets that are relevant to the children's age, (2) accompanying children during the use of gadgets, (3) limiting the children's time to use the gadget, (4) avoiding addiction in children by providing rules, and (5) assisting children in adjusting to the environment

and the development of the times [21].

An overview of the context has been built in the relationship between school and home based on various explanations. Homework and participation in their children's digital education are becoming increasingly important as technology advances. The scholarly output can be increasingly successful with digital technology in learning accompanied by parental involvement [22]. Much attention has been paid to analyzing the impact of digital technologies on learning [1], [23]. However, research on parental involvement in children's education has received less attention, especially in digital learning. Therefore, this study thoroughly discusses the involvement of parents in digital learning using technology and looks at the relationship between school and home.

2 Methods

2.1 Research Design

This research was conducted using quantitative descriptive methods with a survey approach. It obtains a complete picture of parents' involvement in digital-based student learning, especially the role of mothers of elementary school students in Berau Regency, East Kalimantan, Indonesia. The source data was taken from the population of parents in Berau Regency, with about 277 respondents. The criteria for participating parents are mothers of students in the early grades. Furthermore, the technique uses a purposive random sampling technique, supported by consideration [24].

2.2 Data Collection

The data collection used a questionnaire containing indicators of the mother's involvement in stimulating digital learning at home [20], [21], [25]. This questionnaire was circulated in April-July 2022 through a google form application whose link was distributed through the WhatsApp group using the Likert scale. The research data validity technique uses content, constructs, and empirics [24]. The content's validity is measured by testing the feasibility of each item of the questionnaire statement based on the assessment of competent experts. Based on the test results, the panels commented that the questionnaire items were declared feasible to be tested in empiric validity. In validating constructively, the panel also analyzed the rules for writing questionnaire instruments to prevent multi-interpretation when respondents answered several questionnaire item statements. Empiric validity is also used by piloting several questionnaire items in parents who are still in one population of this study but not a sample. Meanwhile, the calculation of the empiric validity test uses the product moment formula.

2.3 Data Analysis Technique

The results of the empiric trial by calculating its internal consistency resulted in 20 instruments having an internal consistency index of ≥ 0.30 . Meanwhile, the reliability calculation was carried out with the Cronbach alpha formula. The results of the reliability calculation reach an alpha value of > 0.7 , hence the instrument is suitable for

research. Each questionnaire item is ready for data collection once validity and reliability have been calculated and explained. The Structural Equation Modeling (SEM) approach is an analytical method, and the variant-based approach ⁴ simultaneously tests measurement and structural models. The analysis tool used is Partial Least Square (PLS) with the help of SmartPLS software version 3 to test research hypotheses. Data analysis is performed directly according to the data that has been obtained [26].

3 Results and Discussion

The use of technology in learning brings many positive impacts for students in elementary schools. However, the involvement of parents, especially mothers, is essential to control and facing various challenges. Based on the interviews with participants, tasks related to the child's schooling became the mother's responsibility. Some studies and literature also show that most mothers perform these significant tasks [21], [25], [27]. The following are the results of a survey of student activities in digital learning.

Table 1. Average Survey Results on the Use of Technology in Digital Learning students

No.	Children's Digital Technology Activities	Score
1	Utilization of technology for educational games	3.964
2	Utilization of technology to study	2.401
3	Utilization of technology for coloring	4.051
4	Utilization of technology for drawing	3.968
5	Utilization of technology to recognize letters, and numbers, read, and count.	4.3

Table 1 shows that the highest percentage of the use of technology ⁴ in children's digital learning is in the activities of recognizing letters and numbers, reading, and learning to count. Before children can read, write, or count, letters and numbers are expected to be learned. The results showed that mothers teach children to think critically and independently. After the child has mastered letters and numbers, gadgets can be used to practice reading and counting [28]. Reading ability is related to language skills that instill ideas and feelings in the text.

Counting activities include mentioning, identifying, operating, and comparing numbers. Meanwhile, the numbers from 0 to 20 can be mentioned in children aged seven years. Parents use numeracy applications to hone skills in primary school children according to their level. Reading, writing, and numeracy applications are needed by around 78% of parents to deepen a child's competence according to their needs. Furthermore, students find it easier to learn the material with learning numeracy applications. There is a combination of visual and audio to digest the material easily, and children are highly interested in the media [29]. Learning to read and count will make it easy for children to follow learning in traditional schools.

The use of technology is also used to learn, draw, and color, and parents should accompany children in using these activities. In drawing tools, mothers introduce children to access applications. Meanwhile, the role of mothers to maximize the use of technology in coloring activities is carried out in several ways, including the vuforia program, color recognition, Macromedia flashes C6, kids painting coloring book, kids center coloring, kids doodle-color and draw coloring for children, and toddler coloring book free [30]. Some mothers also provided instructions on how to download and use the application. Children have initiative and are more critical of the new problems faced while accessing the application through the explanation. The results align with previous research, where children use images to express and articulate emotions, high-level thinking, means of interaction, and presentation of concrete and abstract ideas to show the development of children's thinking [31].

Meanwhile, coloring activities become a means of imagination for children, a tool for recognizing color differences, and fine motor training by coordinating between the hands and eyes. Coloring activities can concentrate and train children's target-setting skills. Additionally, it can become a means to make classes fun and influence creativity [32]. Children also use technology to play educational games wrapped in rules that stimulate cognition and improve the concentration. Playing games can stimulate children's thinking skills, such as block sequencing in terms of color. The combination of several principles of technology-based games can create educational content that is entertaining and fun [33]. Furthermore, learning educational games for reading, writing, and counting can increase the interest in learning for children aged 3-8 years with a percentage of 78.33% (very good) [34]. The use of android-based game media affects language skills, as can be seen from cycles I and II indicators at 53% and 83% [32].

However, the results are contrary to this study because several factors have a considerable influence, namely the involvement of parents in supervising children. The lack of support and the role of parents or teachers can affect learning effectiveness. As a result, there needs to be an agreement to monitor healthy digital access for children. Using existing technology, schools can design a game-based application to invite children to play and learn simultaneously [35]. Therefore, educational games are used as entertainment and to educate children.

Children have the lowest mean utilization of technology in the classroom. The teaching process has used educational applications as a means of Islamic education. The assessment applications for children include asmaul husna, hijaiyah letter recognition, iqro, BIL Hikmah, association (Metas-Q), and memorization method of the Qur'an [36]. The educational application of studying aims to educate and shape Islamic character and a means of learning while playing. Children can be interested in learning with the educational application of hijaiyah letter recognition on gadgets because the presence of sounds and pronunciation methods support the application. Furthermore, an android-based application with Unity 3D gives children's appeal, especially in hijaiyyah letter material included in the excellent category [37]. Therefore, parents should be able to guide their children through the app's interface to ensure the best possible learning experience. One of the benefits of gadget applications is the collaboration to increase knowledge about religion and a way for children to learn while playing.

In addition to measuring the percentage of digital technology utilization, this study also calculated the percentage in terms of parents' roles. The results related to the assessment of the role of parents are presented in Table 2.

Table 2. Average Parental Role Survey Results

No.	The Role of Parents	Score
1	Train children's critical thinking skills based on images and words.	3.477
2	Describe the websites that children can access.	3.942
3	Train children to communicate politely when using social media.	2.884
4	Supervise children when uploading photos and videos on social media.	3.347
5	Train children's creativity to create learning-related photos and videos.	2.549

Based on Table 2, the highest average information obtained is found in the explanation of websites that children can access. There has been no effort to foster children's imaginations regarding learning-related photography and videography. These results indicate that the mothers have performed the required role using digital technology. Parents play a role in assisting digital native children [38]. Parents and women have numerous responsibilities in today's increasingly digital world. Mothers are expected to direct children in the wise use of technology to make positive use of digital media.

Parents are expected to control the use of gadgets during the development and growth of children. They are prominent in the child's growth and development process. Children need maternal guidance during internet use to be utilized positively. Indonesian mothers monitor usage, set limits, and guide to help their children make the most of the available technology tools [39]. Character formation involves the parents' fundamental role [19]. Additionally, mothers also play a role in assisting the use of gadgets by stimulating cognitive competence through Youtube videos. The involvement is skilled and understands the various terms of digital devices to place these media with full supervision and responsibility [40]. Some of the efforts in monitoring the use of gadgets include accompanying children, supervising every content accessed, limiting access time, and setting up the required gadgets appropriate for their age [21].

The children's critical thinking skills should also be practiced towards images and words obtained on the internet. Mothers are obliged to develop themselves through productive activities and become literate. The increasing involvement of coaches, teachers, supervisors, directors, and child controllers is needed during online implementation [41]. Mothers can involve children in developing critical thinking skills by providing stories or cases regarding technology's positive and negative impacts [14], [42]. Parents are determinants of the child's future and success through intensive guidance during the learning process at home.

This study has shown several variables about using digital technology in parental involvement, and the utilization requires a unique role to keep it balanced. Based on the analysis of the previous discussion, data were obtained that technology has been utilized in positive activities. Before hypothesis testing, data quality was analyzed by

testing reliability and validity, compiling inner models, and analyzing algorithms. From the results, an invalid but reliable questionnaire indicator was obtained. The result is because the descriptive validity obtained from the average variance extracted (AVE) and actual values are less than 0.5 and above 0.7. The data is reliable and valid when the Cronbach alpha and descriptive validity values are more than 0.5 and 0.7 (Creswell & Poht, 2017). A model-inner image of the indicators was eliminated, as presented in Figure 1.

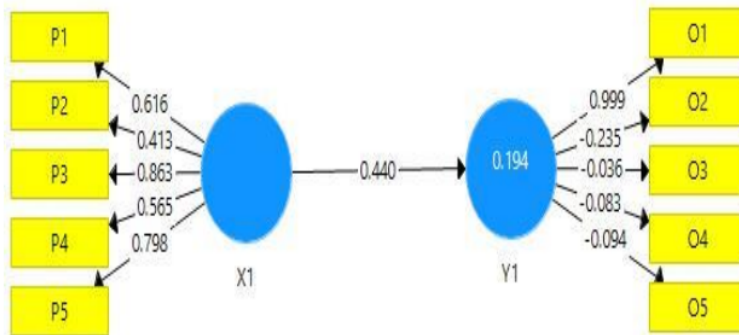


Figure 1. Inner model modifications

Figure 1 presents the inner modification model, while Table 3 presents the test of the quality of the research data. The presentation is as follows.

Table 3. Data Quality Test Results

No	Variables and Indicators	Outer Loading
1	Utilization for educational games (P1)	0.616
2	Utilization for reviewing (P2)	0.413
3	Utilization for coloring (P3)	0.863
4	Utilization for drawing (P4)	0.565
5	Utilization for counting (P5)	0.798
6	Mothers train the child's critical thinking skills towards images and words (O1)	0.999
7	The mothers explain the website that children can access (O2)	-0.235
8	Mothers train children to communicate politely on social media (O3)	-0.036
9	Mothers supervise children who upload photos and videos on social media (O4)	-0.083

10	Mothers train children’s creativity to make photos and videos related to learning (O5)	-0.094
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The data qualification test in Table 3 shows that the outer loading value (for reflexive indicators) obtains the weight of each indicator as a measure of each latent variable. Indicators with outer weight are the strongest variable gauges. Table 3 above exposes the data of latent variables with loading values below 0.5, and the measurements have not met the required convergent validity.

Table 4. Hypothesis Test Results

Symbol Hypothesis	Original Sample	SD	Mean	P Values	T Statistics	Conclusion
X1->Y1	0.441	0.135	0.413	0.002	3.141	Accept

In the SEM model with PLS, the significance test analysis aim to determine the effect of technology utilization on maternal involvement. The bootstrapping procedure is a strategy to test hypotheses using the SEM PLS method with the smartPLS 3.0 computer program to gather results regarding the effect of gadget use on primary school-aged children. Before testing the hypothesis, the T-table value data was obtained by 1.97. Table 4 hypothesis test showed that the statistical value of the effect of gadget utilization (X1) on maternal involvement (Y1) was 3,141 > T-table (1.97). The original sample estimate indicated a positive value of 0.441 as the direction of the relationship between the use of gadgets (X1). Meanwhile, maternal involvement (Y1) is positive since the hypothesis decision is accepted. This shows a significant influence on parental involvement in digital learning.

The results are relevant to several studies that screen use time in children results from interactions between child factors and parental attitudes. Parents’ involvement in fostering technology use is a form of primary responsibility because the family is the first place of education. Communication is the main factor that should be preserved by controlling, monitoring, supporting, and making children aware of the importance of education [43]. The positive relationship between parental supervision of children’s empathic ability is 0.941>0.05 in the use of technology.

4 Conclusions and Limitations

The use of digital learning should have various stimuli to excite and motivate children in digital learning. To accompany children at home, mentoring, education, awareness, collaboration, and parental involvement are required. Parents should control and supervise every activity and information received through digital media and provide excellent and appropriate explanations. Parental involvement is essential to control and face various challenges of students. Based on the interviews with participants, tasks related to schooling are the mother’s responsibility.

The highest percentage of children's digital learning is in recognizing letters and numbers, reading, and learning to count, while the lowest is in the assessment activity. Furthermore, the highest average information is found in the explanation of websites to be accessed. The role that has not been performed is training children's creativity in taking photos and videos related to learning. The statistical value of the effect of gadget utilization (X1) on maternal involvement (Y1) was $3,141 > T\text{-table } (1.97)$. The original sample estimate value shows a positive value of 0.440, which indicates that the direction of the relationship between the use of gadgets (X1) and maternal involvement (Y1) is positive, hence the hypothesis decision is accepted. There is a significant influence on parental involvement in digital learning. Therefore, the mothers have carried out the required role as a companion for children using digital technology. The influence of gadgets on parental involvement is significant for parents to guide children in the digital era. The findings can be the subject of a parent study to monitor and limit the use of gadgets for children of primary school age. Parents should be more competent and know more deeply about the applications used by children. The novelty in this study is more specifically focused on using gadgets by utilizing applications provided by schools or the government.

The limitation is that the Covid-19 pandemic requires social distancing while collecting data on the questionnaire. Additionally, it only analyzes gadget use without associating it with other latent variables, such as manners, emotions, empathic abilities of children, and deviations in sexual behavior. The suggestion for future analysis is to conduct in-depth research on the role of native education in the digital era to prepare children when facing the rapid development of technology. Research can target respondents with a greater level of education or other foci linked with using electronic devices.

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6 References

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