JURNAL PENDIDIKAN USIA DINI
2026, VOL. 20, NO. 1, 116-124
e-ISSN (Online Media): 2503-0566
P-ISSN (Print Media): 1693-1602
http://journal.unj.ac.id/unj/index.php/jpud

Technology and Communication: An Analysis of Digital Communication Skills of Teachers and Parents

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ABSTRACT
The convenience of use and rapid advancement of digital technology across various sectors have created an environment where communication between teachers and parents takes place through digital applications. Although digital technology opens up new opportunities for improving the effectiveness of communication, studies that specifically explore the use of digital technology in the context of early childhood education in Indonesia remain limited. The purpose of this study was to obtain data on early childhood teachers' views on digital technology used in communicating with parents and the extent to which digital technology can facilitate meaningful communication between teachers and parents. This study applied a quantitative approach with a cross-sectional survey design through the distribution of online questionnaires using Google Forms, which were then analyzed using descriptive statistical techniques and the System Usability Scale (SUS) instrument. The respondents in the study were 120 early childhood education teachers. The results show that early childhood teachers in Indonesia generally have adequate academic qualifications and professional certifications and actively utilize digital technology, particularly WhatsApp and Google Meet, to strengthen interactive communication with parents, which has proven to be effective, easy to use, and contributes significantly to enhancing collaboration in supporting early childhood development. Recommendations for further studies are expected to analyze the long-term impact of digital technology utilization on the quality of teacher-parent relationships, parent involvement, and child development outcomes, not only in terms of communication.

Artikel HISTORY
Submission 2025-09-06
Received 2026-03-31
Accepted 2026-04-05

KEYWORDS
(digital communication skills, teachers, parents)

DOI. 10.21009/jpud.v20i1.60136

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1. Introduction

Digital information and communication skills have become important in the last decade and are considered part of 21st-century skills. These skills include knowledge, attitudes, beliefs, and values related to the use of information and communication technology (ICT) in various contexts (Siddiq et al., 2016), so that people must have the necessary cognitive, practical, and socio-emotional skills related to the use of ICT to participate fully in society (Claro et al., 2018).. The continuous advancement of web technology in the 21st century has revolutionized communication patterns and collaboration between individuals (Aldosari et al., 2020). The rapid development of technology continues to change communication patterns in society, including in education. Mastery of technology is essential for teachers because, in addition to being used in learning activities (Ardiyansyah et al., 2021; Mainofriwita & Hadiyanto, 2021; Nurani & Pratiwi, 2020; Hindasah et al., 2020; Ongoro & Mwangoka, 2019; Jaafar et al., 2013), it is also used to communicate with parents (Kaban, 2021). This indicates that online learning environments have become an integral part of educational practices at the early childhood education level (Mustafa & Amir, 2025; Muliani et al., 2024; Ekyana et al., 2021).

In recent years, the development of new media and information technology advances has significantly impacted the patterns and channels of communication between teachers and parents. Digital technology makes it easier for teachers to convey information to parents about their children's classroom activities, which can be monitored online. Whereas previously communication was limited to face-to-face interactions at school or specific meetings, the space for communication has evolved through various digital devices and increasingly diverse internet-based platforms. The forms of communication that have been established are also increasingly varied, ranging from

one-way communication through websites, email, and applications to two-way communication through telephone calls and virtual computer meetings (Graham-Clay, 2005). In addition, other media used for communication between teachers and parents include applications such as WhatsApp (Wasserman & Zwebner, 2017; Kaban, 2021); social media such as Facebook, Instagram, and Twitter (Kaban, 2021); and mobile applications such as Line (Lin, 2019) have expanded the communication channels available to teachers and parents according to their needs, comfort, and usage habits. Digital technology enables faster, more practical, and continuous communication. In addition, digital technology also enables direct communication anytime and anywhere, thereby increasing connectivity and availability between teachers and parents.

For information to be well received by parents, practical communication skills are an important competency teachers must master. Communication skills are an essential competency that teachers must possess in carrying out their daily professional practice (Gerich & Schmitz, 2016; Kasperski & Crispel, 2021; Stevens, 2015). Social interaction, both inside and outside the classroom, is an inherent part of the teaching profession, in which teachers are constantly engaged in various communicative situations with a wide range of stakeholders, including students, colleagues, administrators, parents, and the broader community (Fecke et al., 2025). Effective communication between home and school is an important factor in improving the quality of education and student development (Xu & Zhu, 2025). This communication is one of the responsibilities of teachers, given that, in practice, teachers cannot avoid interacting with parents. On the other hand, parents want to build good and harmonious relationships with teachers (Lin, 2019). The success of this communication depends on mutual understanding and a reciprocal relationship between teachers and parents. According to Ho, Hung & Chen (2013), an effective relationship between teachers and parents will be created if teachers actively communicate and encourage parents to participate in school activities and their children's education (Wasserman & Zwebner, 2017). In this case, teachers play a role in facilitating cooperation, encouraging parental involvement in school activities, and integrating families into the educational process. Effective communication needs to be established in both directions between teachers and parents. Communication from school to home conveys information related to programs, learning outcomes, and school activities. Meanwhile, communication between home and school is expected to occur through parents' active participation in providing input, information, and feedback (Rege & Almeida, 2013). According to Adler et al (1986), communication skills are defined as the ability to reach an agreement or a mutually acceptable outcome (Xu & Zhu, 2025), while communication competence includes the ability to understand language, convey ideas verbally, and participate effectively in conversations (Light & McNaughton, 2014). The achievement of communicative competence in individuals with complex communication needs is not only determined by linguistic, operational, social, and strategic abilities, but also by psychosocial factors such as motivation, attitude, self-confidence, and resilience (Light & McNaughton, 2014).

Effective communication between teachers and parents is fundamental in supporting optimal child development in Indonesia's early childhood education context. The transformation of communication patterns from traditional methods to digital technology presents opportunities and new challenges in educational practice. Although digital technology is believed to expand access, increase interactivity, and strengthen connections between teachers and parents, its use in early childhood education in Indonesia has not yet received much research attention. In particular, the extent to which digital technology can facilitate meaningful communication has not been studied in depth. Therefore, this research is important to fill this gap and provide empirical contributions to developing more effective digital communication strategies in early childhood education settings.

2. Method

This study uses a quantitative approach with a cross-sectional survey design. The survey method was chosen because it can describe the community's needs for educational services, compare groups based on specific attitudes or practices, evaluate perceptions of educational programs, and efficiently conduct large-scale surveys in a single data collection period (Creswell, 2012). In a cross-sectional design, data is collected only once at a specific time, allowing researchers to examine current attitudes, perceptions, opinions, and practices. This design was chosen because it can describe current conditions and quickly produce information. This study aimed to obtain data on early childhood teachers' views on using digital technology in communicating with parents and the extent to which digital technology can facilitate meaningful communication between teachers and parents.

Data collection in this study was conducted by distributing questionnaires online using the Google Forms platform, which was chosen because it could reach many respondents more quickly, efficiently, and flexibly without being limited by distance or time. The population in this study consisted of a limited sample, with a sampling technique known as voluntary response sampling, in which the respondents were those who voluntarily completed and returned the questionnaire. This questionnaire was distributed to 200 early childhood education teachers who are alumni of the Early Childhood Education Program at the Faculty of Teacher Training and Education, Universitas Sebelas Maret (UNS), located in various regions; however, only 120 teachers returned the data. The research instrument was entirely developed by the researcher based on theoretical studies and research needs, and was specifically targeted at early childhood teachers who teach children aged 4–6 years in various early childhood education institutions (ECE) spread across several regions in Indonesia, so that the data obtained could reflect the diversity of communication practices that occur in authentic contexts. In its implementation, 120 ECE teachers

participated as respondents by independently filling out questionnaires between April 7, 2025, and May 5, 2025, which enabled researchers to obtain sufficiently representative data. The questionnaire contained several structured questions focused on the types and uses of digital technology used by teachers to establish, maintain, and strengthen communication with parents of children aged 4–6 years, both in the context of conveying learning information, coordinating school activities, and efforts to establish cooperation in supporting child growth and development.

Data analysis in this study used simple descriptive statistics to clearly describe the patterns of respondents' answers to the questions collected through Google Forms. The interpretation of the analysis results did not stop at the presentation of statistical figures alone; the findings were also compared with previous studies' results to provide a more comprehensive understanding. This survey was explicitly aimed at obtaining data related to early childhood teachers' views on the digital technology used in communicating with parents and the extent to which digital technology can facilitate meaningful communication between teachers and parents, which was analyzed using a standard usability measurement tool in the form of the System Usability Scale (SUS) (Brooke, 2020). The System Usability Scale (SUS) is an instrument used to assess the perceived usability of a system as a whole. This instrument was introduced by Brooke (1996) and has since become one of the most widely used standard scales in evaluating user experience. SUS is considered a classic scale that has been used since the 1980s and remains relevant today as the primary reference in measuring perceptions of the usefulness of digital systems (Xiong et al., 2022). This study did not conduct validity and reliability tests, as it utilized a standardized measurement tool; furthermore, according to Bangor, Kortum, and Miller (2008), the reliability of the SUS instrument is high, with a reliability coefficient of 0.91 as determined by a large-scale study (Xiong et al., 2022). The data analysis itself was carried out through three main interrelated steps, namely, first, identifying the level of respondent participation and the possibility of bias in the answers provided; second, conducting a descriptive analysis to find general trends that emerged from the data; and third, compiling a report that systematically presented the results of the descriptive analysis so that it could be understood in its entirety (Creswell, 2012).

3. Result

Early childhood education teachers who were respondents in the study participated in filling out a questionnaire via Google Form that had been distributed. Respondents completed questionnaires on: 1) early childhood teachers' views on digital technology used in communicating with parents, and 2) the extent to which digital technology can facilitate meaningful communication between teachers and parents. The following are the details of the survey results from all respondents.

3.1. Demographic Data

The first table shows the demographic data of respondents participating in this study, categorized based on educational strata, professional education, and employment status. As can be seen from the one hundred twenty respondents (n=120), six teachers (n=6) are Master's degree (S2) graduates and one hundred fourteen teachers (n=114) are Bachelor's degree (S1) graduates. Based on the professional education category, one hundred teachers (n=100) already have a professional educator certificate, while twenty teachers (n=20) do not yet have one. In addition, based on their employment status, five teachers (n=5) came from government-managed ECE institutions with the status of Civil Servants. In comparison, one hundred fifteen teachers (n=115) came from privately-managed ECE institutions with the Non-Civil Servants status. Respondents came from thirty-three cities or districts in Indonesia (n=33). Details of the respondents' demographic data are presented in TABLE 1.

TABLE 1. Demographics Data of Respondents

No.	Categories	Sub-Categories	Frequency	Percentage (%)
1	Levels of Education	Bachelor's degree (S1)	114	95
		Master's degree (S2)	6	5
2	Professional Education	Teacher Profession Program	100	83,33
		Non-Teacher Profession Program	20	16,67
3	Personnel Status	Civil Servants	5	4,17
		Non-Civil Servants	115	95,83
4	Regency / City	Salatiga	8	6,67
		Sukoharjo	8	6,67
		Surakarta	32	26,67
		Wonogiri	6	5
		Boyolali	7	5,83
		Magelang	1	0,83
		Sragen	6	5
		Blora	2	1,67
		Temanggung	2	1,67
		Wonosobo	2	1,67
		Purbalingga	2	1,67
		Purworejo	1	0,83
		Tegal	1	0,83
		Klaten	4	3,33
		Karanganyar	2	1,67
		Kebumen	2	1,67
		Tulungagung	1	0,83
		Semarang	3	2,5
		Kudus	1	0,83
		Banjarnegara	1	0,83
		Cilacap	1	0,83
		Jepara	3	2,5
		Kendal	2	1,67
		Pekalongan	2	1,67
		Gresik	1	0,83
		Madiun	1	0,83
		Ponorogo	2	1,67
		Brebes	3	2,5
		Cianjur	2	1,67
		Karawang	1	0,83
		Yogyakarta	1	0,83
		Balikpapan	8	6,67
		Sumbawa Barat	1	0,83

Based on the demographic data of the respondents in Table 1, it can be concluded that the majority of ECE teachers who participated in this study have a Bachelor's education background (S1), have undergone professional education and obtained professional educator certificates, and work in private ECE institutions with Non-Civil Servants status. Only a small percentage of respondents have a master's degree (S2), do not have a professional certificate, and have civil servant status. Furthermore, the respondents in this study have a reasonably wide distribution, covering 33 cities and districts in various regions of Indonesia, so that the data obtained can be viewed as having a fairly comprehensive representation of the real condition of early childhood teachers from various regions with different characteristics.

3.2. Digital Technology Used by Teachers in Establishing Communication With Parents

Based on the survey results distributed to the respondents, it was found that all teachers of Early Childhood Education (ECE) involved in this study have utilized digital technology as the primary means of carrying out interactive communication with parents. Digital technology conveys various important information related to learning programs, the achievement of children's learning outcomes, and a series of activities organized by the school. The survey Data also showed that one hundred and fifteen teachers (n=115) chose to use the WhatsApp application as a communication medium. This shows that most teachers use WhatsApp in communication, considering this application is one of the most common mobile device-based platforms owned, accessed, and used by the people of Indonesia at various social levels. This also confirms that WhatsApp is highly relevant to the practical needs of communication between teachers and parents, mainly because it is easy to operate, fast in delivering messages, and can reach various groups without significant obstacles. The other five teachers (n=5) used virtual meetings through the free Google Meet app. The use of Google Meet facilitates interactive communication between teachers and parents to minimize the occurrence of miscommunication. In more detail, the variety of digital technology teachers use in various cities and districts can be observed through the visual data presented in Figure 1.

Based on the survey results, teachers gave various reasons for using digital technology in communicating with parents. The reasons for the use of digital technology can be seen in Figure 2.

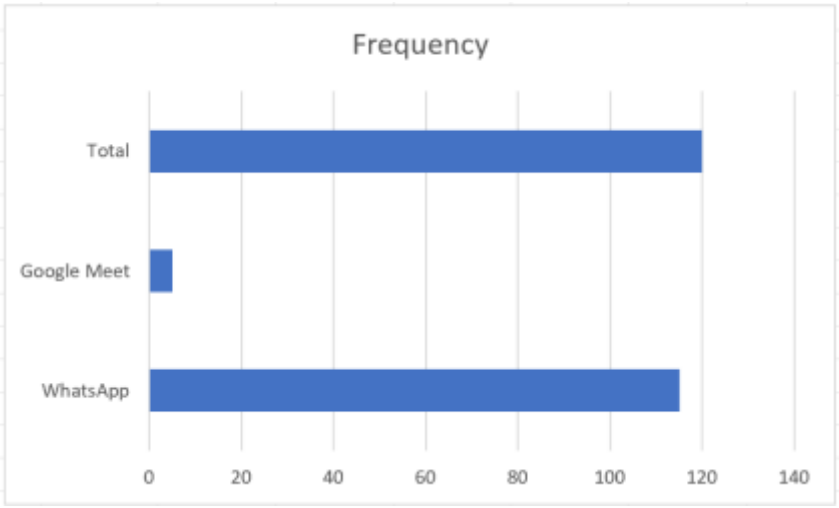


FIGURE 1. Results of Digital Technology for Teacher-Parent Communication

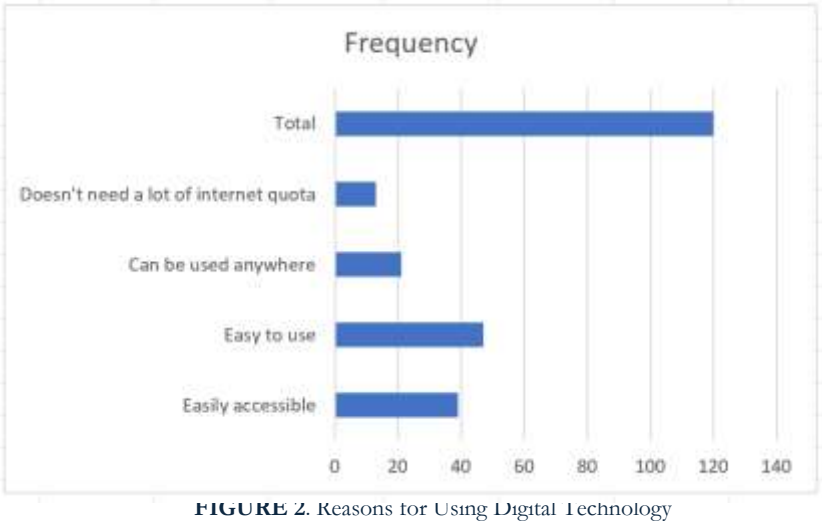


FIGURE 2. Reasons for Using Digital Technology

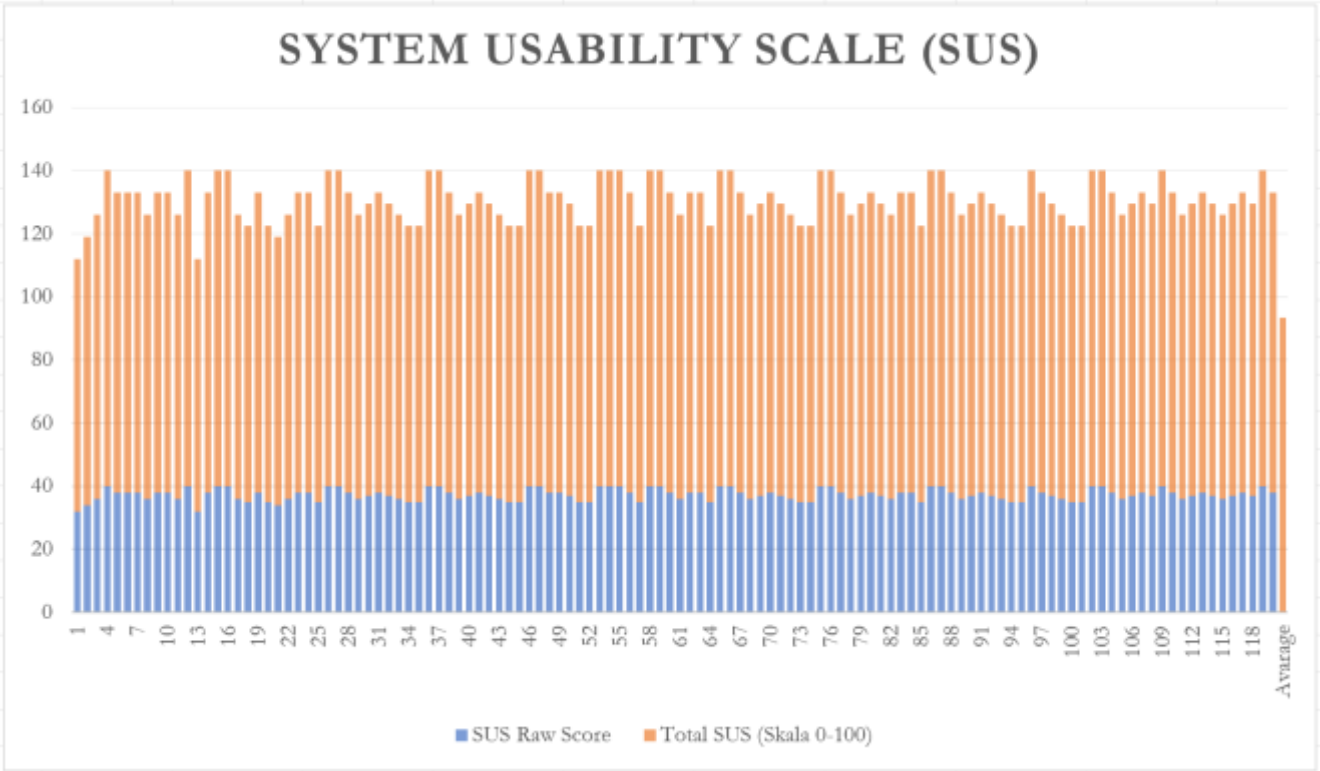
Based on data processing results, the most dominant reason for using the application is the ease of use factor, which was chosen by forty-seven respondents (n=47). These findings indicate that user-friendlyness is a significant consideration that drives respondents to choose the application. The second reason that stands out is the ease of access, which was stated by about thirty-nine respondents (n=39), so it can be understood that accessibility becomes the next important factor in determining preference for an application. Furthermore, as many as twenty-one respondents (n=21) stated that the flexibility of use in various situations and locations is their reason for utilizing the application. Although the number is not as large as the previous two reasons, this finding still shows that some users also consider flexibility. Meanwhile, the reason for the lowest frequency is the efficient use of internet quotas, with

thirteen respondents (n=13). This shows that although the saving quota has a positive value, the factor is not a top priority for most respondents compared to ease of use and accessibility. Thus, it can be concluded that most respondents in this study tend to choose specific applications or technologies for ease of Use and high accessibility. At the same time, other factors, such as internet quota efficiency, are only additional considerations that are not so dominant.

3.3. The role of Digital technology in increasing the intensity of teacher–parent communication

In answering the question of the extent to which digital technology can realize meaningful communication between teachers and parents, researchers used the System Usability Scale (SUS). This is because, based on Bangor, Kortum, and Miller (2008), the reliability of this instrument is high, namely, obtaining a reliability coefficient of 0.91 through an extensive sample study (Xiong et al., 2022). The test is scored using 10 statements, half positive and half negative, each using a 5-point scale, with 1 for strongly disagree and 5 for strongly agree. The total score is on a scale of 0-100. A system with a score over 60 is generally considered a product with better usability. The higher the score, the better the usability of the system. SUS evaluates users' effectiveness, efficiency, and satisfaction with the software. Therefore, a higher SUS score means that digital technology has a better objective usefulness and provides better user satisfaction. In general, a SUS score greater than 60 points indicates average perceived availability, and a score greater than 75 indicates good perceived availability. From the evaluation results in the following table (Figure 3), the overall average score of SUS is 93.33, which also indicates that the usefulness of digital technology in the form of WhatsApp and Google Meet applications in teacher–parent communication activities is good.

FIGURE 3. The results of the perception of the usefulness of Digital technology for teacher-parent communication



The results showed that users' optimal use of digital technology plays a significant role in facilitating effective communication between teachers and parents in monitoring early childhood development. Through WhatsApp and Google Meet applications, parents get faster and easier access to information teachers submit about their child's development. They can provide responses or feedback directly to the report. This two-way communication pattern allows for closer collaboration between teachers and parents, so that stimulation strategies designed for children can be more targeted, consistent, and sustainable according to the developmental needs of each child.

4. Discussion

The findings on the demographic profile of respondents, as presented in Table 1, provide a fairly important picture of the characteristics of Early Childhood Education (ECE) teachers in Indonesia. The fact that most of the respondents have a Bachelor's degree (S1) academic qualifications, have undergone professional education, and obtained a professional educator certificate, shows a trend of increasing awareness of ECE teachers on the importance of the legitimacy of professional competence. This is in line with government policies that emphasize academic qualification standards and certification of educators as a prerequisite to improve the quality of educators

at various levels of education, including in ECE institutions. This is due to the fact that, according to a study conducted by Web & Cox (2004), teachers' beliefs regarding the integration of ICT into learning influence the way they make pedagogical decisions. Teachers' teaching behaviors, as well as their perceptions and beliefs, often limit the use of ICT in learning activities (Pelgrum, 2001; Gialamas & Nikolopoulou, 2010). In addition, the study results also show that improving the professional development of early childhood education (ECE) teachers is an important step towards improving children's learning experience (Zhou et al., 2022). Thus, this data can be viewed as a positive indicator that early childhood education teachers, especially in private institutions, have been working to adapt to regulatory demands while improving their professionalism.

In line with this demographic profile, the survey results also showed that all early childhood teachers who were respondents had used digital technology as the primary means of carrying out interactive communication with parents. This utilization conveys information about learning programs, child development achievements, and school activities. Most teachers choose the WhatsApp application because it is considered more practical, easy to operate, fast in delivering messages, and has a broad reach in various walks of life. Meanwhile, other teachers use Google Meet as an alternative, considering this platform provides a virtual face-to-face interaction space for more intensive communication while minimizing misunderstandings. This finding confirms that using digital technology, especially WhatsApp and Google Meet, significantly contributes to strengthening the effectiveness of communication between teachers and parents, where WhatsApp acts as an efficient routine communication medium. At the same time, Google Meet supports more comprehensive and in-depth discussions. This is in line with previous research that, although the use of instant messaging applications such as WhatsApp provides convenience in establishing communication between teachers and parents, this medium has limitations because it is not able to present emotional dimensions in the form of voice intonation, facial expressions, and body language as occurs in face-to-face communication (Wasserman & Zwebner, 2017) so that virtual meetings. In addition, previous studies have shown that parent-teacher interactions—whether collaborative or non-collaborative—play a key role in determining whether students achieve positive or less-than-satisfactory results (Ellis et al., 2015). Effective communication between teachers and parents is also key to maximizing children's academic achievement (Kraft, 2024).

Furthermore, the evaluation results through the system Usability Scale (SUS) reinforce these findings by showing an average score of 93.33, far beyond the standard threshold of 75 as an indicator of good usability levels. The findings reflect that WhatsApp and Google Meet applications have a high level of ease of Use and are well accepted in the context of communication between teachers and parents. This aligns with previous studies that show that social media, especially WhatsApp, is widely used because it is free, fast, easy, and can save time and workload with mass messaging (Kaban, 2021). Furthermore, this study confirms that the use of digital technology contributes significantly to the formation of effective two-way communication. Not only do parents have faster and more accurate access to information about their child's development, but they can also provide feedback directly to teachers. The interaction pattern built through this mechanism has implications for strengthening collaboration between teachers and parents, so that child development stimulation strategies can be applied more precisely, consistently, and continuously.

5. Conclusion

Early childhood education teachers in Indonesia, especially in private institutions, have demonstrated a favorable professional profile by possessing academic qualifications and certification of educators in accordance with government policies and efforts to improve their professional competence. In addition, using digital technology, especially WhatsApp and Google Meet, was the primary means of strengthening interactive communication between teachers and parents. WhatsApp acts as an efficient routine communication medium. At the same time, Google Meet supports more intensive and comprehensive interaction. The high score on the System Usability Scale (SUS) indicates that these two applications are easy to use and widely accepted, to encourage the creation of effective two-way communication, accelerate access to information, and strengthen the collaboration of teachers and parents in supporting optimal and sustainable Child Development. The research indicate that applications with high usability can enhance the effectiveness of two-way communication. The following research recommendation is to analyze the long-term impact of digital technology on the quality of teacher–parent relationships, parental involvement, and child development outcomes, not limited to communication aspects.

6. Acknowledgement

The author gratefully acknowledges the invaluable contributions of the Early Childhood Education (ECE) Management Research Group, the participating respondents, and the anonymous reviewers, whose constructive feedback has significantly enhanced the quality of this work. The authors extend their profound gratitude to the Institute for Research and Community Service (LPPM), Universitas Sebelas Maret, Surakarta, for its generous support of this research through the Research Group Scheme under Contract No. 371/UN27.22/PT.01.03/2025.

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