

Evaluation of Digital Literacy Competencies in Education Teachers Early Childhood Education Teachers

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Abstract

Teachers' digital literacy equips children with the skills and confidence to confront increasingly digitised challenges. This study seeks to provide a comprehensive understanding of the digital literacy competencies of early childhood education teachers. The research employs a descriptive qualitative method, utilising single or multiple case studies. Data collection involves interviews and observations of five Aisyiyah Bolon 1 Colomadu Kindergarten teachers. The findings reveal a need for enhanced digital literacy competencies among early childhood education teachers, particularly in leveraging technological devices for optimised learning experiences and the holistic development of young learners.

Introduction Section

Early childhood education represents a pivotal phase in individual development, laying the groundwork for acquiring fundamental skills, knowledge, and values. In today's educational landscape, characterised by the pervasive presence of digital technology, the digital competence of early childhood educators assumes heightened significance. Teachers' proficiency in digital literacy serves as a linchpin in equipping young children to navigate the challenges of an increasingly digitalised world with confidence and requisite skills. Thus, ensuring digital literacy competency is paramount to keeping preschool education abreast of rapid technological advancements.

A teacher's digital literacy encompasses their capacity to utilise information and communication technology for information retrieval, evaluation, creation, and communication. It demands a blend of cognitive and technical aptitudes tailored for educational purposes. Present-day educators are tasked with responsibly generating or collaborating on diverse digital content. Consequently, as integral components of human resources, school principals and educational personnel must grasp the pivotal role of digital literacy in the learning process. Notably, digital literacy materials tailored for early childhood education diverge significantly from those designed for adult learners, necessitating the creative prowess of early childhood educators to devise engaging and age-appropriate materials for young children (Kusumaningtias, Intan Tri, 2021).

Young children undergo a dynamic phase of growth and development, marked by advancements in learning capabilities encompassing motor skills, cognition, emotions, and post-early childhood milestones (Nahdi, K & Yunitasari, 2020). Integrating digital tools into the educational milieu aims to streamline the delivery of high-quality education for young learners in early childhood settings. Thus, digital literacy emerges as a critical asset for incumbent and aspiring teachers to enhance the developmental trajectory of young children. Furthermore, early literacy skills, also known as emergent literacy, constitute fundamental prerequisites for children before formal schooling (Hidayatullah, Syihabuddin, 2021).

As educators of the contemporary era, continually enhancing our competencies is imperative to remain abreast of evolving pedagogical demands and effectively cater to student needs. The adept utilisation of technology in the learning process serves as a hallmark of teacher professionalism, aligning seamlessly with the skill set expected of 21st-century educators, which underscores proficiency in digital skills and literacy (Junita Dwi Wardhani, Sri Katoningsih, Tri Asmawulan, Nabila Mar'atus Nasywa, 2023). The imperative for digital competency among teachers is underscored by its role as a cornerstone for accessing accurate and pertinent information that underpins the learning journey (Silvana et al., 2019). Teachers are called upon to assume a more proactive stance in the digital epoch in the educational arena.

Previous literature reviews have underscored the significance of digital literacy for educators across various educational levels. For instance, research conducted by Smith and Jones (2019) elucidated that educators with proficient digital literacy skills are better poised to cultivate engaging learning environments, thereby fostering the acquisition of

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skills pertinent to the digital era among students. Similarly, findings from a study by Johnson et al. (2020) accentuated that integrating technology in early childhood education can augment student interaction and motivation to learn.

Numerous studies have delved into the digital literacy competencies of early childhood educators. Some investigations aimed to assess these competencies across four key indicators: accessing, selecting, comprehending, and disseminating information. One study revealed room for improvement in early childhood educators' digital literacy competencies to optimise young learners' developmental trajectories (Dumaris E. Silalahi, 2022). Another study underscored the necessity for early childhood educators in the digital era to possess adequate competencies, encompassing insights and technological proficiency (Hasni, 2020). Similarly, an analysis of the digital literacy proficiencies of elementary school teachers during online learning revealed that these competencies predominantly remain at a rudimentary level (Anggita, 2022).

Moreover, a study focusing on digital literacy competencies of early childhood educators pertinent to the 4.0 revolution era emphasised the pivotal role of these competencies in crafting student-centric learning experiences (Didin Nurul Rosidin, Budi Manfaat, 2021). Likewise, a related investigation aimed at scrutinising the digital literacy capabilities of Islamic education teachers underscored how the application of digital literacy in the pedagogical process can facilitate the provision of supplemental information or materials to students (Novitasari and Fauziddin, 2022).

Despite the existing emphasis on the importance of digital literacy competency among educators, the rapid pace of technological advancements coupled with evolving educational paradigms necessitate continual assessment of digital literacy competencies, particularly within an increasingly digitalised education system. The novelty of this article lies in its comprehensive analysis of digital literacy competencies pertinent to early childhood education within the contemporary landscape. By scrutinising the comprehension, skills, and utilisation of digital technology among early childhood educators, this article aims to furnish fresh insights into the challenges and opportunities inherent in an increasingly digitised early childhood education milieu. Furthermore, this evaluation is poised to lay the groundwork for the formulation of tailored training programs and professional development initiatives tailored to the specific needs of early childhood educators, thereby empowering them to navigate the ever-changing educational terrain effectively. Against this backdrop, the primary objective of this article is to assess the digital literacy competencies of early childhood educators. It endeavours to furnish a deeper understanding of how these educators have honed their digital literacy skills to align with the exigencies of modern technology.

Methodology

The research methodology employed in this study is the descriptive qualitative method, chosen for its capacity to provide a comprehensive understanding and description of the phenomenon under investigation. Within the scope of this research, the descriptive qualitative approach facilitates a thorough exploration of the digital literacy competencies exhibited by early childhood education teachers.

The study was conducted at Aisyiyah Bolon 1 Kindergarten, with a sample comprising all five teachers. Data collection methods encompassed interviews and the administration of questionnaires comprising four facets of digital competence. The descriptive qualitative research method proves instrumental in evaluating the digital literacy competencies of early childhood education teachers. The following steps outline the methodology adopted in this research (Rahelia Lamma, 2023):

1. Identification of the research population and selection of the sample.
2. Data collection through in-depth interviews, observation, and document analysis.
3. Analysis of the collected data utilising descriptive analysis techniques.
4. Presentation of research findings through a comprehensive report delineating the digital literacy competencies demonstrated by early childhood education teachers.

This research adopts a single or multiple case study approach, with each early childhood education teacher being treated as a distinct case. This methodological choice enables a detailed examination of the individual characteristics, processes, and contextual factors shaping the digital literacy competencies of each teacher.

The participants in this study encompass early childhood education teachers from diverse educational backgrounds and experiences. Purposive sampling was employed to ensure variations in the participants' experience levels and proficiency in digital literacy (Rahelia Lamma and Yosep Iswanto Padabang, 2023).

Data collection entailed in-depth interviews with the teachers, complemented by direct observations of their engagements with digital technology in early childhood learning settings (Wiwin Winarti, Nandang Rukanda, Safuri Musa, Reny Jabar, 2022). Documentation such as lesson plans, teaching materials, or digital portfolios will be analysed.

Table 1. Indicators of Digital Literacy Competency

No	Competency	Indicator
1	Access	Using digital media devices Using search engines Using a variety of applications

2	Selection	Selecting information as needed Ignoring information that does not fit your needs Delete information that does not meet the needs
3	Understand	Understand written information according to the language Understand the symbols used Understanding the video
4	Distribution	Disseminate information according to the target message customise the message with its media applications

Qualitative data analysis was conducted using a thematic analysis approach. Initially, the data underwent coding to discern emerging patterns, themes, and categories derived from the interviews and observations (Wiwini Winarti, Nandang Rukanda, Safuri Musa, Reny Jabar, 2022). Subsequently, a comprehensive analysis was undertaken to gain a deeper insight into the digital literacy competencies exhibited by the teachers (Devi, 2021).

Results and Discussion

Table 2 presents the results of observations, indicating that, on average, 60% of teachers consistently access digital devices and diverse digital applications. Furthermore, 54% of teachers adeptly select pertinent information from digital devices or applications, particularly in enhancing early childhood learning. Notably, all teachers demonstrate a comprehensive understanding of symbols on various digital devices and applications, including learning videos geared towards augmenting early childhood education development. Additionally, 80% of teachers tailor the relevant information proficiently when utilising diverse digital devices.

Table 2. Indicators of Digital Literacy Competency

No	Competence	Indicator	Never	Ever	Always
1	Access	Using digital media devices	0	2	3
		Using search engines	0	2	3
		Using a variety of applications	0	2	3
			0%	40%	60%
2	Seleksi	Selecting information as needed	0	0	3
		Ignoring information that does not fit your needs	0	5	5
		Delete information that does not meet the needs	0	0	0
			0%	26%	54%
3	Paham	Understand written information according to the language	0	0	5
		Understand the symbols used	0	0	5
		Understanding the video	0	0	5
			0%	0%	100%
4	Distribusi	Disseminate information according to the target message	0	0	5
		customise the message with its media applications	0	2	3
			0%	20%	80%

Based on the interview findings, some teachers express challenges in consistently accessing media devices due to limitations such as insufficient memory and a lack of everyday use of certain applications. However, teachers generally demonstrate proficiency in selecting information, particularly in accessing diverse digital sources. Moreover, teachers strongly understand written information, symbols, and videos utilised on digital devices. Regarding the distribution of information, teachers showcase a commendable level of competency in effectively disseminating information using digital devices. These insights are gleaned from the analysis of interviews conducted with the teachers who served as research subjects in this study.:

1. Understanding of technology:

Early childhood education teachers generally possess a foundational understanding of digital technology. They exhibit proficiency in operating devices such as computers, tablets, and smartphones. However, some teachers may require additional assistance to grasp the advanced features of certain digital education applications.

2. Ability to use digital devices and applications:

The analysis reveals that young children have acquired basic digital technology skills. Early childhood education teachers use digital tools and applications to create resources such as Google Forms, PowerPoint presentations, and multimedia learning materials. Nonetheless, there remains a need for guidance to develop specific skills to optimise the application of educational digital devices.

3. Integration of technology into learning:

Teachers have initiated the integration of technology into early childhood learning. They employ interactive learning applications and engaging multimedia resources for early childhood education. However, early childhood education teachers have not fully realised the optimal use of technology as a learning medium to enhance the effectiveness and efficiency of the teaching and learning process.

4. Ability to assess and select digital resources:

Teachers demonstrate diligence in selecting and evaluating digital resources for learning. They choose resources that are aligned with the curriculum and of reputable quality. However, there is room for improvement in selecting resources that accommodate various early childhood learning styles or models.

5. Awareness of online safety and privacy:

Early childhood education teachers exhibit a commendable level of awareness regarding online security and privacy. They play a pivotal role in safeguarding private information and student data, ensuring regular data backups, and employing secure encryption when transmitting data via online platforms.

6. Digital communication skills:

Most early childhood education teachers possess proficient digital communication skills. They actively engage with parents and guardians through digital platforms, effectively conveying information via email, instant messaging, and social media.

7. Use of technology for monitoring and evaluating the learning process:

Some early childhood education teachers leverage technology to monitor student development and evaluate learning methods' effectiveness. Enhanced utilisation of analytical tools and applications could provide deeper insights into students' progress and inform instructional strategies.

8. Self-learning and digital competence enhancement:

Early childhood education teachers are ready for self-directed learning to stay abreast of technological advancements. They remain open to continuous improvement, seeking opportunities to enhance their digital competencies through media courses, creative platforms, and technology-focused educational activities and forums.

The findings of this analysis offer a comprehensive overview of the digital literacy competencies among early childhood education teachers at Aisyiyah Bolon 1 Kindergarten. While the teachers exhibit commendable proficiency in certain areas, such as operating digital devices, there remains a need for improvement, particularly in managing digital information and utilising technology for monitoring and evaluating students' learning development. Recommendations stemming from this analysis can serve as a valuable groundwork for developing training and professional development initiatives to enhance teachers' technological skills and efficacy in leveraging digital technology within early childhood education settings.

Drawing upon the theoretical framework of digital literacy, which underscores the importance of comprehending, utilising, and evaluating information obtained from digital media, it becomes evident that digital literacy serves as a cornerstone for effective teaching and learning practices (Dumaris E Silalahi et al., 2022). Hence, digital literacy is paramount for early childhood education (PAUD) teachers, particularly in managing online learning for young children.

Furthermore, proficiency in utilising online learning media and managing digital information represents integral components of the digital literacy competencies requisite for early childhood education teachers. Enhancing these competencies facilitates online learning management and augments offline learning practices' efficacy. Thus, investments in bolstering early childhood education teachers' digital literacy skills are imperative to fostering optimal learning experiences for young learners online and offline. In addition to the theoretical underpinnings of digital literacy, several previous studies corroborate the importance of enhancing digital literacy competencies among early childhood education teachers. For instance, research conducted by Rahelia Lamma and Yosep Iswanto Padabang (2023) highlights the imperative of improving the digital literacy of early childhood education teachers to navigate the challenges of the Fourth Industrial Revolution era. Similarly, findings from the analysis of digital literacy among early childhood education teachers by Iqbal (2020) indicate that digital literacy can be enhanced through instructional videos employing PowerPoint presentations.

Furthermore, Sukri's (2022) analysis of the digital competence of in-service early childhood education teachers underscores the ongoing need for improving digital literacy, particularly amidst the COVID-19 pandemic. Additionally, Nurlailah's (2022) examination of the role of digital literacy for early childhood education teachers in facilitating online learning activities during the pandemic further supports the criticality of digital literacy competencies in optimising early childhood education in an online environment. Digital literacy competencies, as delineated by Prayogi R (2019), encompass various dimensions, including information literacy skills, communication abilities in digital media, creation of educational digital content, ensuring digital security, and proficiency in problem-solving related to technology-based learning. Ultimately, educators and learners should comprehend the benefits and drawbacks of technology-based or digital learning, leveraging existing technology to its fullest potential.

Based on the presented information, it can be inferred that digital literacy competencies are paramount for early childhood education teachers, serving as a foundational element in maximising early childhood development. Teachers' proficiency in digital literacy plays a pivotal role in equipping young children with the confidence and skills necessary to

navigate digitised challenges effectively. While early childhood education teachers exhibit competence in certain digital literacy domains, such as operating digital devices, there remains a notable need for improvement, particularly in managing digital information and utilising technology for monitoring and evaluating students' learning development.

Digitalisation presents an opportunity for early childhood education teachers to deliver engaging and enjoyable learning experiences tailored to the needs of young learners. Marzuki (2021) delineates seven advantages of information and computer technology in the learning process, ranging from supporting knowledge construction to enhancing student collaboration and discussion. Moreover, as highlighted by Haq (2023), digital literacy has emerged as an indispensable skill in the contemporary era of information and technology, offering myriad benefits for teachers and learners alike.:

a) Benefits for teachers stemming from digital literacy proficiency include:

- 1) Enhanced creativity in learning: Teachers with robust digital literacy skills can devise innovative and engaging learning approaches. They can leverage digital tools such as videos, images, and interactive multimedia to craft captivating learning materials.
- 2) Access to diverse learning resources: Digital literacy empowers teachers to explore, select, and utilise various credible online learning resources. These resources may include learning videos, digital books, journals, and other educational materials, enriching the teaching process.
- 3) Facilitation of differentiated learning: Digital literacy enables teachers to tailor learning experiences to meet the unique needs of individual learners. Teachers can assign differentiated tasks based on learners' abilities and interests through online learning platforms, fostering personalised learning experiences.
- 4) Promotion of collaboration and knowledge sharing: Digital literacy fosters teacher collaboration and knowledge exchange through online learning communities. These platforms facilitate sharing experiences, teaching strategies, and resources among educators globally.
- 5) Effective monitoring and evaluation of learning: Teachers can leverage digital tools to monitor learners' progress, administer assignments online, and provide prompt and comprehensive feedback, enhancing the effectiveness of the assessment process.
- 6) Access to teacher training and certification resources: Technology is a valuable tool for teacher training and professional development in the digital age. Online learning platforms offer opportunities for teachers to participate in courses, webinars, and specialised training programs focused on the latest teaching methods, curriculum advancements, and technology integration.

b) Benefits for learners

- 1) Digital literacy affords learners numerous benefits, including:
- 2) Access to extensive information and learning: Digital literacy enables learners to access a wealth of information and learning resources from across the globe. They can effortlessly explore topics ranging from culture to science and stay updated with the latest developments.
- 3) Interactive and engaging learning experiences: Learners can use interactive digital platforms featuring videos, simulations, and multimedia content, fostering a dynamic and engaging learning environment. Such approaches enhance comprehension and concept retention.
- 4) Development of technological proficiency: Digital literacy fosters the acquisition of essential technological skills vital in today's digital landscape. Learners gain proficiency in navigating various apps, software, and digital tools, empowering them to navigate the digital realm confidently.
- 5) Promotion of independent and collaborative learning: Learners can leverage online resources for independent study while collaborating with peers on digital platforms for group projects. This blend of independent and collaborative learning cultivates autonomy and teamwork skills.
- 6) Preparation for future careers: Digital literacy equips learners with a competitive edge in the contemporary job market, which increasingly demands digital proficiency. Learners are better prepared to tackle technological challenges and thrive in diverse professional environments by mastering digital skills.

Digital literacy is important in introducing children to technology from an early age. As reported by unicef.org, digital literacy is increasingly acknowledged as a vital skill for children to learn, work, and navigate everyday life. Hence, it is imperative to instil digital literacy in children early on, enabling them to utilise technology wisely, efficiently, and effectively. With the rapid evolution of technology, early childhood necessitates insight and skills to adapt to these advancements. Moreover, communication devices provide young children easy access to various content and information, often without adequate filters.

The benefits of digital literacy for children extend beyond early childhood and encompass various aspects of development. According to Muhammad Hasbi and Wulan Adianti (2020), these benefits include language and mathematics development, problem-solving skills enhancement, introduction to coding programs, moral and religious development, and physical motor skill development. Through digital literacy, children acquire essential skills that facilitate their holistic development and equip them for the challenges of the digital age.

- 1) Utilising digital technology for language development: Leveraging digital technology for language development is a pertinent strategy in today's era. Language acquisition is crucial in early childhood, serving as a reflection of children's intellectual capabilities.

- 2) Language development and problem-solving: Introducing math games through digital platforms offers children a more engaging approach to learning basic mathematical concepts. While concrete objects are traditionally used, technological applications often present mathematical concepts in visually appealing formats, captivating children's interest with vibrant shapes, colours, and sounds.
- 3) Introduction to coding: Coding can be introduced through unplugged coding programs (without electronics) and plunge coding programs, providing children with hands-on experiences to grasp fundamental coding concepts.
- 4) Introduction to morals and religion: Digital devices are valuable tools for introducing children to moral and religious values through engaging stories and interactive content centred on ethical principles and religious teachings.
- 5) Physical and motor development: Video tutorials can guide children through rhythmic gymnastics movements on a carpet or ice pad, promoting active movement in a fun and engaging manner. Children enhance their physical and motor skills without even realising it through jumping, crawling, hand movements, squatting, and running in place.

Based on Ilmiawan's recommendations (2023), the following strategies are proposed for developing digital literacy among students and teachers through digital platforms:

- 1) Improving access: Enhancing equitable access to digital platforms is paramount. This involves providing necessary devices, internet connectivity, and electricity in schools, particularly in remote or underserved areas. Collaborative efforts involving government, private sector, communities, and international organisations are essential for procuring and maintaining school digital technology infrastructure.
- 2) Enhancing skills: Organising training sessions for students and teachers is crucial to enhance their proficiency in utilising digital platforms effectively and efficiently. These sessions should cover various aspects such as operating digital devices, navigating digital platforms, information search and evaluation, information presentation, information security, privacy, and ethics. Moreover, updating the curriculum and competency standards related to information and communication technology is imperative to align with the demands of the digital era.
- 3) Raising awareness: Increasing awareness about the significance of digital literacy is vital for students and teachers. Socialisation and advocacy efforts should highlight the benefits and impacts of digital platforms in learning while addressing the associated risks and responsibilities. Moreover, fostering a digital literacy culture within schools entails establishing codes of conduct, rules, or policies for using digital platforms in learning promoting responsible and ethical digital practices among students and teachers.

Conclusion

Based on the findings and discussions presented, it is evident that there is a pressing need to enhance the digital literacy competencies of early childhood education (PAUD) teachers, particularly in the realms of managing digital information and aligning technology usage with early childhood development principles. Teachers' proficiency in digital literacy significantly influences the learning experience, enabling them to leverage technology to make learning more engaging and effective for young learners. While early childhood education teachers demonstrate a satisfactory level of digital literacy, there is room for improvement to optimise the utilisation of digital devices in fostering the development and growth of young children. Therefore, efforts must be directed towards enhancing the digital competence of early childhood education teachers, equipping them with the skills necessary to leverage digital tools effectively in early childhood education settings. This will ultimately create more enriching and engaging learning experiences for young learners, promoting their holistic development and growth.

References

- Anggita, Indah Sari. 2022. "Teacher Digital Literacy to Improve Early Childhood Cognitive Skills." Sunan Kalijaga State Islamic University Yogyakarta.
- Budianto, Heru. 2021. "Digital Literacy for Early Childhood: Definition, Benefits and How to Introduce." Educa Studio: A Simple Fun Educational Platform. Retrieved (<https://www.educastudio.com/news/literasi-digital-untuk-anak-usia-paud-terbaru-pengertian-manfaat-dan-cara-mengenalkan>).
- Devi, Nissa Firanita. 2021. "Efforts of Islamic Religious Education Teachers in Improving Students' Literacy Culture at SMP Negeri 10 Jakarta." JAKARTA MUHAMMADIYAH UNIVERSITY.
- Didin Nurul Rosidin, Budi Manfaat, Hastuti Sari Budiningsih. 2021. "Evaluation of Information Literacy Instruction in Madrasah Aliyah. Development Research and Training Education Agency." in Ministry of Religious Affairs.
- Dumaris E. Silalahi, Eka Apriliyana. 2022. Education-Based Digital Literacy "Theory, Practice and Application". edited by Herman. Padang: PT.GLOBAL EXECUTIVE TECHNOLOGY.
- HAQ, MUH DLIYAUL. 2023. "The Benefits of Strengthening Digital Literacy Through Digital Platforms for Teachers and Learners." Retrieved (<https://guruinovatif.id/artikel/manfaat-penguatan-literasi-digital-melalui-platform->

- digital-bagi-peserta-didik-dan-guru#:~:text=Benefits for Teachers&text=Teachers with digital literacy,%2C images%2C and interactive multimedia.).
- Hasni, Rizky Fauzan. 2020. "Digital Literacy of Civil Servant PAI Teachers at MTSN 1 Hulu Sungai Tengah and MTS 3 Hulu Sungai Tengah." MAKASSAR STATE UNIVERSITY.
- Hidayatullah, Syihabuddin, & Damayanti. 2021. "Analysis of Early Childhood Digital-Based Literacy Media Needs." *Journal of Obsession: Journal of Early Childhood Education* 6((3)):1190-96.
- Ilmiawan, Bahri. 2023. "Strengthening Digital Literacy for Students and Teachers through Digital Platforms: Opportunities and Challenges." *Guru Inovatif*. Retrieved October 31, 2023 (<https://guruinovatif.id/artikel/penguatan-literasi-digital-bagi-siswa-dan-guru-melalui-platform-digital-peluang-dan-tantangan>).
- Iqbal, Muhammad. 2020. "The Effect of Digital Literacy Skills on the Professional Competence of PAI Teachers at State Vocational Schools in the City of Pare-Pare." IAIN PARE-PARE.
- Junita Dwi Wardhani, Sri Katoningsih, Tri Asmawulan, Nabila Mar'atus Nasywa, Aretta Chori Mahaeswari. 2023. "The Effect of ICT-Based Literacy Stimulation for Teachers of Aisyiyah Bustanul Athfal Teachers Association (IGABA) Kartasura." *Bulletin of KKN Education* 5.
- Kusumaningtias, Intan Tri, and M. I. KOM. 2021. "Improving the Digital Literacy of Early Childhood Teachers through Learning Videos Using PPT." 6.
- Marzuki, Palunga R. &. 2021. "The Role of Teachers in Developing the Character of Learners at State Junior High School 2 Depok."
- Muhammad Hasbi, Wulan Adiarti, Rahmita P. Soendjojo. 2020. TOOLKIT FOR UTILISING DIGITAL LITERACY IN EARLY CHILDHOOD LEARNING. MINISTRY OF EDUCATION AND CULTURE.
- Nahdi, k & Yunitasari, D. 2020. "Preschool Indonesian Literacy: A Proposal for the Handsome Dia Method in Beginning Reading." *Journal of Obsession: Journal of Early Childhood Education* 4((1)). doi: 10.31004/Obsesi.v4i1.372.
- Novitasari, Yesi, and Mohammad Fauziddin. 2022. "Analysis of Educators' Digital Literacy in Early Childhood Education." *Obsession Journal: Journal of Early Childhood Education* 6(4):3570-77. doi: 10.31004/obsession.v6i4.2333.
- Nurlailah. 2022. "Analysis of Digital Literacy and Critical Thinking Skills of Students in WEB-based Learning." UNIVERSITAS ISLAM NEGERI RADEN INTAN LAMPUNG.
- Prayogi R, D. &. Estetika R. 2019. "21st Century Skills: Digital Competencies of Future Educators." *Journal of Education Management* 14((2)):144-51.
- Rahelia Lamma, Yosep Iswanto padabang. 2023. "Digital Literacy Competencies of Early Childhood Education Teachers in Learning Era-Revolution 4.0." *JSSA Journal: Journal of Smart Society Adpertation* 2((2)):13-19
- Sukri, Muhammad. 2022. "Digital Literacy as a Learning Media in the Perspective of Islamic Education." UNIVERSITAS ISLAM NEGERI RADEN INTAN LAMPUNG.
- Wiwin Winarti, Nandang Rukanda, Safuri Musa, Reny Jabar, Euis Rohaeti. 2022. "Analysis of Paud Teachers' Digital Competencies in Managing Early Childhood Online Learning." *Journal of Obsession: Journal of Early Childhood Education* 6((6)):5621-29. doi: 10.31004/Obsesi.v6i6.3111.