



Raudhatul Athfal Teachers' Preferences for Digital Presentation Media to Optimize Classroom Learning

Ardhina Asri^{1(*)}, Husin², Huda³, Yusria⁴

^{1,2,3,4}Departement of Early Childhood Islamic Education, Faculty of Education and Teacher Training, Universitas Islam Negeri Sulthan Thaha Saifuddin Jambi, Jambi, Indonesia

Abstract

Received : January 20, 2026

Revised : June 20, 2026

Accepted : July 31, 2026

Raudhatul Athfal (RA) institutions in Jambi Province face a critical infrastructure paradox in implementing the digital transformation mandated by the Merdeka Curriculum: while 100% of schools provide teachers with computers/laptops and reliable internet, only 50% are equipped with projectors or LCDs, a 50-percentage-point gap that constrains the delivery of digital presentations. This study aimed to (1) characterize the accessibility of digital resources and usage patterns of PowerPoint and Canva, (2) examine teachers' perceptions of the features, usability, and impact of both media, and (3) determine training needs and facility-acquisition recommendations. Twenty RA teachers from three districts/cities in Jambi Province (Tanjung Jabung Barat, Kota Jambi, and Muaro Jambi) were purposively sampled for this descriptive quantitative study; data were gathered through a validated 16-item Google Forms questionnaire and analyzed using descriptive statistics, response categorization, and thematic coding. Teachers viewed digital media as improving teaching quality (100%) and student engagement (95%), with Canva preferred over PowerPoint by 90% of respondents for its user-friendliness and Islamic-appropriate templates. Only 60% received institutional technical support despite universal (100%) demand for government-funded training, indicating that multi-level intervention is required to close Jambi's RA infrastructure and digital-competency gap.

Keywords:

RA Teacher Preferences; PowerPoint and Canva; Islamic Early Childhood Education; Learning Technology Infrastructure; Merdeka Curriculum

(*) Corresponding Author: ardhinaasri@gmail.com

How to Cite: Asri, A., Husin, Huda, & Yusria. (2026). Raudhatul Athfal Teachers' Preferences for Digital Presentation Media to Optimize Classroom Learning. *JTP - Jurnal Teknologi Pendidikan*, 28(2), 469–484. <https://doi.org/10.21009/jtp.v28i2.64869>

INTRODUCTION

The Merdeka Curriculum prioritizes digital transformation in early childhood education, yet Raudhatul Athfal (RA) institutions in Jambi Province encounter a significant dilemma when implementing it. According to a preliminary study, most RA teachers are compelled to display digital presentations solely through laptop screens because there are no projectors or LCDs in the classroom, despite the fact that children are highly enthusiastic about online media-based learning and are strongly drawn to visually unique displays during learning activities (Kemendikbudristek, 2022). Because of these infrastructure constraints, only a small percentage of teachers are able to effectively implement technology-based learning, despite preliminary data showing high child enthusiasm for digital media (Dong, 2018; Hatzigianni & Kalaitzidis, 2018; Kerckaert, Vanderlinde, & van Braak, 2015). It is urgent to provide sufficient facilities to support the integration



of digital presentation technologies like PowerPoint and Canva in RA learning in order to address this infrastructure gap (Lim & Wardrip, 2024; Undheim, 2022).

When compared to traditional methods, digital presentation tools like PowerPoint and Canva can increase children's engagement by up to 45%, according to international research. However, this effectiveness is highly dependent on the availability of infrastructure and teachers' digital competency (Palaigeorgiou & Papadopoulou, 2019; Yelland, 2018). Device availability, structured teacher training, and institutional support are three crucial components of technology integration in early childhood education (Dong & Newman, 2016; Mertala, 2019; Su, Zhong, & Chen, 2023). According to Konca and Tantekin Erden (2021), teachers who received digital training were 3.2 times more likely to use technology in their regular classes. However, research conducted in Europe by Nikolopoulou and Gialamas (2016) found that the biggest technical obstacles for preschool teachers were projector and LCD limitations.

Research on digital transformation under the Merdeka Curriculum has grown rapidly in Indonesia over the past three years, yet it has concentrated mainly on general basic and primary education rather than early childhood settings. Studies of teacher readiness and technology adoption within the Merdeka Mengajar platform report inconsistent implementation, constrained largely by limited devices and uneven digital literacy among teachers (Prakoso, Ramdani, & Rahmah, 2021; Badrus Sholeh, Kamsan, & Aliyah, 2023; Wahyono et al., 2024). Within Islamic early childhood settings specifically, digital-literacy gaps among PAUD and RA teachers persist even as national digital platforms expand (Ristianti, Putri, & Wahyudi, 2024; Safitri, 2024), and structural barriers such as limited mentoring support and gender-linked disparities in teacher deployment further complicate technology adoption in RA/TK settings (Erdiyanti & Syukri, 2021; Rohman & Mulyana, 2023). Adoption research using the UTAUT2 framework similarly shows that Indonesian teachers' acceptance of digital platforms depends heavily on perceived ease of use and institutional facilitation (Aminah, Aditya, & Kanthi, 2024). What distinguishes Jambi's RA context, however, is the specific pairing of near-universal access to laptops and internet with acute projector scarcity, combined with these institutions' distinctly Islamic pedagogical orientation — a configuration that remains largely unexamined in the existing Indonesian literature (Widianto, 2021).

There is currently relatively little research on RA teachers' preferences for PowerPoint over Canva in Indonesia, especially in Jambi Province, given infrastructural constraints and variation in digital competency (Masoumi, 2021; Taimalu & Luik, 2019; Voogt & McKenney, 2017). To close this gap and comprehend how RA teachers select and maximize digital presentation material in the face of resource limitations, empirical research is required. The objective of this study is to examine RA teachers' preferences for Canva and PowerPoint in Jambi Province while taking actual infrastructure constraints into account. In particular, this study: (1) describes the availability of digital resources and the usage patterns of Canva and PowerPoint in RA institutions; (2) examines teachers' opinions of the features, usability, and impact of both media on children's enthusiasm for learning; and (3) determines training needs and creates suggestions for responsive facility

acquisition and teacher training initiatives (Liu & Hwang, 2023; McManis & Gunnewig, 2012).

The comparison between PowerPoint and Canva in this study is not merely a matter of popularity; the two platforms embody distinct pedagogical affordances. PowerPoint's linear, slide-based structure favors sequential content delivery and is closely tied to teachers' existing digital literacy from formal training (Oriji & Nnadioze, 2023), whereas Canva's drag-and-drop, template-driven design lowers the technical threshold for content creation and enables rapid customization of visually rich, culturally responsive materials — including Islamic motifs and Arabic calligraphy — that are pedagogically salient for early childhood Islamic education (Hinchcliff & Mehmet, 2023; Rahmawati, 2021). Understanding which platform RA teachers gravitate toward, and why, therefore has direct implications for how training programs and content-creation support should be designed, not simply which software is more widely used.

Because it closes the gap between learning technology's promise and its actual application in Jambi Province's RA institutions, this research is essential. Theoretically, it helps to comprehend how early childhood teachers in Islamic education environments with limited resources utilize digital media (Forsling, 2023; Luo, Berson, & Berson, 2021; Plowman, Stephen, & McPake, 2010). Evidence-based findings will practically direct the purchase of facilities and teacher preparation programs that are in line with real-world needs (Edwards, Straker, & Oakey, 2018; Iivari, Sharma, & Ventä-Olkkonen, 2020). Increased digital literacy proficiency and technologically enhanced learning environments that promote the best possible child development outcomes are among the long-term impacts anticipated (Dong & Mertala, 2021; Otterborn, Schönbörn, & Hultén, 2020).

METHODS

The disparity between children's strong enthusiasm for digital media-based learning and the limited adoption of presentation technology in Jambi Province's RA institutions — a result of infrastructural constraints and teachers' uneven digital competence — is what makes this study urgent. According to preliminary research, most RA teachers cite a lack of specialized training on using PowerPoint and Canva for early childhood learning, as well as difficulties accessing projectors and LCDs for optimal presentations (Moss et al., 2007; Radesky, Schumacher, & Zuckerman, 2015). Empirical studies examining RA teachers' preferences for these digital presentation media remain scarce (Otterborn, Schönbörn, & Hultén, 2020; Palaigeorgiou & Papadopoulou, 2019). The study's objectives were to: (1) outline digital resource availability and usage patterns; (2) examine teachers' opinions on features and efficacy; and (3) determine training needs and policy recommendations.

The preferences of RA teachers for PowerPoint and Canva digital presentation materials were investigated using a quantitative descriptive method. Twenty active RA teachers from three districts in Jambi Province (Tanjung Jabung Barat, Kota Jambi, and Muaro Jambi) were selected using purposive sampling

based on the following criteria: (1) educators who have taught at RA for at least three years; and (2) educators who are willing to participate in the study.

The questionnaire instrument contained sixteen closed-ended (Yes/No) questions covering six aspects: (1) Facilities & Infrastructure Availability (items 1-3); (2) Digital Presentation Media Use (items 4-6); (3) Media Features & Ease of Use (items 7-9); (4) Benefits & Effectiveness (items 10-11); (5) Training & Support Needs (items 12-15); and (6) Media Preferences (item 16) (Hutchinson & Waters, 1987; Toklu & Hursen, 2021). The questionnaire included an open column for suggestions and experiences (Dong & Newman, 2018), plus demographic information on education level and teaching experience.

Prior to distribution, the questionnaire underwent validity testing. Content validity was established through expert judgment: two lecturers in early childhood education and one lecturer in educational technology at UIN Sulthan Thaha Saifuddin Jambi evaluated each item for relevance, clarity, and alignment with the six needs-analysis dimensions, and items were revised according to their feedback before the instrument was finalized. Because the instrument consists of dichotomous (Yes/No) items, internal consistency reliability was subsequently assessed using the Kuder-Richardson formula 20 (KR-20) on the full set of responses ($n = 20$), yielding an omnibus coefficient of 0.46. This modest value should be interpreted in light of the instrument's design: KR-20, like Cronbach's alpha, assumes a unidimensional scale measuring a single latent construct, whereas this questionnaire was deliberately structured to span six conceptually distinct needs-analysis dimensions — facilities and infrastructure, usage patterns, media features, benefits, training needs, and media preference (Tavakol & Dennick, 2011). Computing a single reliability figure across items that intentionally measure different constructs is known to understate internal consistency; this effect is compounded here by five items (1, 3, 9, 11, and 15) that elicited a near-unanimous “Yes” response across the sample, since items with little or no variance cannot meaningfully correlate with other items and mechanically depress the coefficient without indicating true inconsistency. The reliability estimate is therefore reported transparently as a methodological limitation of a multidimensional needs-analysis instrument rather than evidence of measurement error, and is discussed further in the Conclusion (Toklu & Hursen, 2021).

Researchers used Google Forms to disseminate digital questionnaires via communication networks to RA teachers in each location in December 2025. Respondents were informed of the study's aim and asked for express consent (informed consent) at the outset of the questionnaire, with a promise of respondent data confidentiality and anonymity (Luo, Berson, & Berson, 2021; Moore & Tillberg-Webb, 2023; Spector, 2016). Before further analysis, the gathered data were reviewed to ensure all questions had been addressed. All participants were given pseudonyms to guarantee their identities were kept private during the study (Warren & Beck, 2023). The full demographic data of the RA teachers who took part in this study are displayed in Table 1.

Table 1. Demographic Information of Respondents – RA Teachers

No	Code Name	Highest Qualification	Experience	Position
1	GRA01	Bachelor of Early Childhood Education	21 years	RA Teacher

2	GRA02	Bachelor of Islamic Education	3 years	RA Teacher
3	GRA03	Bachelor of Islamic Broadcasting Communication	7 years	RA Teacher
4	GRA04	Bachelor of Islamic Education	8 years	RA Teacher
5	GRA05	Bachelor of Islamic Broadcasting Communication	8 years	RA Teacher
6	GRA06	Bachelor of Law in Constitutional Law	5 years	RA Teacher
7	GRA07	Bachelor of Early Childhood Education	3 years	RA Teacher
8	GRA08	Master of Early Childhood Education	4.5 years	RA Teacher
9	GRA09	Bachelor of Law	15 years	RA Teacher
10	GRA10	Bachelor of Early Childhood Education	6 years	RA Teacher
11	GRA11	Bachelor of Early Childhood Education	15 years	RA Teacher
12	GRA12	Bachelor of Arts in Islamic Cultural History	7 years	RA Teacher
13	GRA13	Bachelor of Early Childhood Education	9 years	RA Teacher
14	GRA14	Bachelor of Early Childhood Islamic Education	8 years	RA Teacher
15	GRA15	Bachelor of Arts in English Literature	11 years	RA Teacher
16	GRA16	Bachelor of Early Childhood Education	22 years	RA Teacher
17	GRA17	Bachelor of Early Childhood Education	3 years	RA Teacher
18	GRA18	Bachelor of Early Childhood Education	21 years	RA Teacher
19	GRA19	Bachelor of Early Childhood Education	3 years	RA Teacher
20	GRA20	Bachelor of Early Childhood Education	4 years	RA Teacher

The questionnaire instrument created for this study, distributed across 16 questions based on six components of the needs analysis of RA teachers with respect to PowerPoint and Canva digital presentation media, is displayed in Table 2.

Table 2. Teacher Needs Analysis Instrument

No	Aspect	Indicator	Items	Total Items
1	Facilities and Infrastructure Availability	Teachers have access to computers/laptops, projectors/LCDs, and stable internet.	1-3	3
2	Utilizing Digital Presentation Resources	Teachers are familiar with Canva and PowerPoint; they frequently integrate digital media.	4-6	3
3	Media Features & Ease of Use	Canva templates are appropriate for early childhood learning needs, and teachers find PowerPoint and Canva to be user-friendly.	7-9	3
4	Advantages and Efficiency	Digital media improves children's focus and quality of instruction.	10-11	2
5	Training and Support Requirements	Teachers require additional training, and there is institutional and governmental assistance.	12-15	4
6	Preferences for Media	For RA instruction, teachers like Canva over PowerPoint.	16	1

Total
Questionnaire
Questions

16 16

Descriptive statistical techniques characterized RA teachers' preferences. The analysis proceeded in four phases: (1) tabulating frequencies and percentages to identify dominant patterns; (2) categorizing responses according to the six aspects of the needs-analysis framework (Kerckaert, Vanderlinde, & van Braak, 2015); (3) qualitative content analysis of the open-ended suggestion column using thematic coding, following Braun and Clarke's (2006) six-phase approach — familiarization with the raw responses, generation of initial codes (e.g., “template availability,” “Islamic design elements,” “projector scarcity”), collation of codes into candidate themes, review of themes against the coded extracts, definition and naming of final themes (such as “content-creation ease” and “delivery-infrastructure constraint”), and production of the narrative synthesis reported in the Results and Discussion section; and (4) combining the quantitative and qualitative data to obtain a more comprehensive understanding of RA teachers' preferences (Creswell & Plano Clark, 2018). Results are displayed as frequency tables with narrative interpretations supported by illustrative teacher quotations. The analysis process adheres to principles of objectivity and transparency (Hiniker et al., 2015).

RESULTS & DISCUSSION

The results of a structured questionnaire administered to 20 RA teachers in three districts/cities (Tanjung Jabung Barat, Kota Jambi, and Muaro Jambi) regarding the availability of digital facilities and patterns of using PowerPoint and Canva are presented in Table 3. According to the results, all teachers (100%) reported school access to computers/laptops and reliable internet. However, only half (50%) had projector/LCD access. Regarding usage experience, 85% had used Canva versus 65% for PowerPoint, yet only 35% reported frequently incorporating digital presentation materials into their day-to-day teaching — a considerably lower rate than the proportion who have ever created such materials, suggesting that isolated content-creation capability does not reliably translate into sustained classroom practice.

Table 3. Availability of Digital Facilities and Media Usage Patterns

No	Questions	Yes (n)	No (n)	Yes (%)	No (%)
1	Are there laptops or PCs at your school that can be utilized to make presentation materials?	20	0	100%	0%
2	Does your school have an LCD screen or projector for showing digital presentations?	10	10	50%	50%
3	Does your school have a reliable enough internet connection to use online tools like Canva or PowerPoint?	20	0	100%	0%
4	Have you ever created presentation materials for teaching kindergarten using PowerPoint?	13	7	65%	35%

5	Have you ever created visual learning materials for kindergarten using Canva?	17	3	85%	15%
6	Do you frequently incorporate digital presentation materials into your regular teaching tasks?	7	13	35%	65%

These results show that RA institutions in Jambi Province have a serious infrastructure deficit, especially with respect to the availability of projection equipment necessary for the effective delivery of digital presentations (Nikolopoulou & Gialamas, 2016; Undheim, 2022). The difference between content-creation equipment (100%) and display technologies (50%) shows that although teachers have the means to create materials, the lack of projectors limits the full use of technology-based learning (Lim & Wardrip, 2024). Teachers are forced to present solely through laptop screens, creating a paradox in which investments in digital infrastructure cannot be used efficiently. This paradox is further evidenced by the marked gap between teachers who have ever produced digital materials (65% for PowerPoint, 85% for Canva) and the much smaller proportion — just 35% — who report incorporating such materials into their teaching on a regular basis. Rather than reflecting low competency or motivation, this gap between one-off content creation and habitual classroom use is consistent with a structural barrier: without reliable projection equipment, digital materials that teachers are able to create largely remain unused in day-to-day instruction.

This paradox can be productively read through the lens of the Technology Acceptance Model (TAM), which holds that behavioral intention to use a technology is jointly shaped by perceived usefulness and perceived ease of use (Davis, 1989). In Jambi's RA institutions, perceived usefulness of digital presentation media is evidently high — reflected in teachers' near-universal endorsement of its instructional value — yet the ease-of-use dimension is undermined not by teachers' attitudes but by the absence of delivery infrastructure itself. TAM's original formulation assumes that ease of use is primarily a function of a technology's design; the Jambi case shows that in resource-constrained early childhood settings, ease of use is equally a function of institutional infrastructure that lies outside teachers' control. Read alongside the Technological Pedagogical Content Knowledge (TPACK) framework (Mishra & Koehler, 2006), which conceptualizes effective technology integration as the intersection of technological, pedagogical, and content knowledge, the data suggest that RA teachers possess adequate technological and content knowledge to create digital materials but are structurally prevented from enacting the pedagogical-delivery component of TPACK. Recent systematic reviews confirm that TPACK development among early childhood teachers is frequently constrained less by knowledge deficits than by contextual and infrastructural factors (Lim, Lake, Beisly, & Ross-Lightfoot, 2024; Schmid, Brianza, Mok, & Petko, 2024), reinforcing that the projector gap identified here is an infrastructural rather than a competency problem.

Table 4 shows how teachers rated PowerPoint and Canva in terms of usability, feature suitability, and influence on children's learning. According to the statistics, 90% of teachers said Canva was easier to use when developing kindergarten learning materials, compared to 75% who thought PowerPoint was easy to use. Every respondent (100%) gave a perfect positive response regarding

the availability of templates appropriate for kindergarten education on Canva. In terms of efficacy, 95% of educators said that digital media helped capture children's attention, and all of them (100%) said it enhanced the caliber of their instructional materials.

Table 4. Teachers' Perceptions of Media Usability and Efficiency

No	Questions	Yes (n)	No (n)	Yes (%)	No (%)
7	Is it simple to utilize PowerPoint to create educational resources for kindergarteners?	15	5	75%	25%
8	Is it simple to create educational resources for kindergarten using Canva?	18	2	90%	10%
9	Does Canva offer templates that are appropriate for learning requirements in kindergarten?	20	0	100%	0%
10	Are kindergarteners more interested in and attentive to digital presentation media?	19	1	95%	5%
11	Does the quality of your instructional materials improve when you employ digital presentation media?	20	0	100%	0%

International studies demonstrating 45% improvements in engagement compared to traditional techniques support these strong positive perceptions of digital media's efficacy (Palaigeorgiou & Papadopoulou, 2019; Yelland, 2018). Teachers' comfort with Canva's drag-and-drop functionality is reflected in the difference in ease of use between PowerPoint (75%) and Canva (90%) (Forsling, 2023; Su, Zhong, & Chen, 2023). This mirrors findings from other classroom contexts, where Canva's template library and multimedia features have similarly been shown to increase learner engagement and reduce preparation time for teachers (Hilmiyati & Juhji, 2024; Kristy, Adams, & Taylor, 2024). RA teachers appear to value time-efficient tools designed for early childhood environments, as seen in their perfect appreciation (100%) of Canva's pre-made templates (Dong & Newman, 2016; Mertala, 2019).

Table 5 lists the support systems and training requirements for RA teachers using digital presentation media. According to the research, 85% of teachers said they needed more PowerPoint training, and 90% said they needed more Canva instruction. While 100% of respondents said they required government support for training, only 60% of teachers reported receiving technical support from their schools. With 90% of respondents selecting Canva over PowerPoint (10%) for RA learning, the final choice demonstrates Canva's clear preference among this sample.

Table 5. Training Needs and Support System

No	Questions	Yes (n)	No (n)	Yes (%)	No (%)
12	Do you require further training to make the most of PowerPoint?	17	3	85%	15%
13	Do you require more training to make the most of Canva?	18	2	90%	10%
14	Has the institution offered assistance or technical support for using digital presentation media?	12	8	60%	40%
15	Do you require government support to offer training in digital presentation media?	20	0	100%	0%
16	Would you rather use Canva than PowerPoint for kindergarten learning?	18	2	90%	10%

These results highlight the urgent need for institutional support systems and methodical professional development programs to overcome the digital competency gap among RA teachers (Masoumi, 2021; Taimalu & Luik, 2019). The 100% universal demand for government assistance in delivering training, together with the 40% of teachers who currently lack school-based technical support, underscores the need for multi-level intervention involving local education authorities and the Ministry of Religious Affairs (Iivari, Sharma, & Ventä-Olkkonen, 2020). In keeping with the findings of Konca and Tantekin Erden (2021), who found that teachers in Turkey were 3.2 times more likely to integrate technology after receiving structured digital training, the strong preference for Canva (90%) indicates that when teachers are given autonomy, they tend to choose platforms that minimize the learning curve while maximizing visually appealing outputs for early childhood learners.

Three important and interconnected findings emerge from this investigation. First, only 50% of institutions have projectors despite near-universal computer/laptop access (100%) and dependable internet (100%) (Kerckaert, Vanderlinde, & van Braak, 2015). Second, teachers believe digital media increases instructional quality (100%) and engagement (95%), but implementation is hampered by infrastructural limitations (Edwards, Straker, & Oakey, 2018; McManis & Gunnewig, 2012). Third, there is considerable demand for professional development (85% for PowerPoint, 90% for Canva, 100% for government support), with the clear preference for Canva (90%) indicating that user-friendly platforms better meet the needs of RA teachers (Liu & Hwang, 2023; Voogt & McKenney, 2017). These findings must be interpreted within the context of Jambi Province's RA institutions, which have less funding and fewer facilities than typical kindergartens. "Hopefully in the future, every school will be able to provide its own projector screen to facilitate teachers in their teaching," one teacher noted in an open comment, adding that "the children are very interested in seeing unique displays during learning" — a remark that captures the fundamental conflict between the availability of advanced digital tools and the infrastructure needed to fully employ them.

Several convergent factors help explain the high preference for Canva (90%) over PowerPoint (10%). First, Canva's user-friendly drag-and-drop interface lowers technological barriers and cognitive load, which is important in early childhood education because teachers place a high value on content-creation efficiency (Dong & Mertala, 2021; Forsling, 2023). Second, all respondents (100%) expressed strong appreciation for Canva's extensive template collection, which notably offers child-friendly designs, suggesting that RA teachers value readily available materials suited to the kindergarten learning environment (Plowman, Stephen, & McPake, 2010). Third, several teachers mentioned in open responses that Canva provides templates with Islamic motifs and Arabic calligraphy options that align with the mission of early childhood Islamic education; as one teacher stated, Canva is more convenient because it offers a wider range of elements for creating learning media and can even be used to design PowerPoint-style presentations with attractive templates. This finding is consistent with Mertala (2019) and Dong and Newman (2016) on the three essential elements of technology integration — device availability, organized training, and institutional support — where deficiencies in

any one of these elements, particularly projectors (50%) and technical support (60%), result in superficial technology integration despite teachers' positive attitudes (Dong & Newman, 2016, 2018; Mertala, 2019).

International comparisons reveal a variety of recurring patterns. The challenges observed in Indonesian RA settings (50% projector access) are consistent with European research identifying projector/LCD limitations as a primary technological obstacle (Nikolopoulou & Gialamas, 2016). These findings demonstrate that infrastructure deficiencies take precedence in resource-constrained settings — teachers express strong willingness (100%) but are unable to implement effectively due to material constraints, in contrast to studies that highlight teacher attitudes as the primary obstacle (Blackwell, Lauricella, & Wartella, 2014; Luo, Berson, & Berson, 2021). Teachers favor visual-oriented platforms that reduce preparation time when given a choice and no cost limits, as seen in Canva's preference here in contrast to PowerPoint's dominance in some developed contexts (Moss et al., 2007; Otterborn, Schönborn, & Hultén, 2020). By identifying patterns in early childhood Islamic education where pedagogical-technological elements combine with religious and cultural considerations, this study's training-demand patterns extend the research literature while reflecting previous findings (Konca & Tantekin Erden, 2021; Radesky, Schumacher, & Zuckerman, 2015).

From a wider perspective, this study clarifies the intricate relationship between pedagogical practice, technology infrastructure, and education policy in Indonesia's Islamic early childhood education sector (Kemendikbudristek, 2022; Su, Zhong, & Chen, 2023). If the Merdeka Curriculum's emphasis on digital transformation is not accompanied by targeted resource allocation to under-resourced institutions, it may unintentionally widen existing inequities (Iivari, Sharma, & Ventä-Olkkonen, 2020). Systemic gaps in training access — 100% of teachers require government assistance, yet only 60% receive school support — point to the inadequacy of the current professional development system for RA educators, who often lack access to the systematic in-service programs available to their counterparts in public kindergartens (Masoumi, 2021; Undheim, 2022). “Digital-based learning is currently very much needed, especially at the Early Childhood Education level, where children are very enthusiastic about online media-based learning,” one teacher observed, adding that continued training on Canva's instructional resources is essential for educators. Without ongoing investment in infrastructure and human resource development, RA institutions risk falling behind in the digital transformation, with potential consequences for the developmental outcomes of thousands of children across Jambi Province.

Several recommendations follow from these results. First, through phased procurement methods, the Ministry of Religious Affairs should prioritize infrastructure investment in RA institutions, concentrating on projector/LCD supply for the 50% of schools that still lack them (Lim & Wardrip, 2024). Second, structured professional development programs should be offered spanning fundamental digital literacy through advanced pedagogical applications, reflecting the 90% preference for Canva while maintaining PowerPoint literacy (Taimalu & Luik, 2019; Voogt & McKenney, 2017). Third, the 40% institutional support gap should be closed by establishing technical support systems through district-level

digital resource centers or teacher mentor networks. Fourth, facility procurement should be guided by the actual needs of educators, respecting the 90% Canva preference (Dong & Mertala, 2021; Spector, 2016). Fifth, partnerships should be established to produce digital educational resources that integrate Islamic values and best practices for young children (Hatzigianni & Kalaitzidis, 2018; Plowman, Stephen, & McPake, 2010). Taken together, this multi-level intervention — spanning infrastructure, training, technical support, and culturally responsive resource development — can help bridge the gap between the promise of digital learning and its implementation, ensuring that children in Islamic early childhood settings benefit from technology-enriched experiences aligned with the Merdeka Curriculum's vision (Edwards, Straker, & Oakey, 2018; Warren & Beck, 2023).

CONCLUSION

This study identified critical infrastructure gaps in RA institutions in Jambi Province: while all schools (100%) have computers/laptops and stable internet, only 50% are equipped with projectors/LCDs. Teachers' views on the efficacy of digital media in raising student engagement (95%) and teaching quality (100%) were overwhelmingly positive, with Canva emerging as the most popular choice (90%) because of its user-friendliness and the availability of templates appropriate for Islamic early childhood education. There is an urgent need for professional development, as only 60% of teachers receive institutional technical support despite 100% expecting government support for training. This suggests that systematic, multi-level intervention is required to close the digital and skill gaps documented here.

This study is subject to several limitations that should be considered when interpreting its findings. First, the sample was limited to 20 RA teachers purposively drawn from three districts in Jambi Province, which constrains the statistical generalizability of the results to RA institutions elsewhere in Indonesia. Second, the descriptive quantitative design, relying on a self-reported Yes/No questionnaire, captures teachers' perceptions and usage patterns but does not measure actual child learning outcomes or verify reported technology use through direct classroom observation. Third, data were collected at a single time point, which precludes any assessment of how teachers' preferences and infrastructure conditions may change over time. Fourth, the questionnaire's omnibus internal consistency ($KR-20 = 0.46$) was modest; as explained in the Methods, this reflects the instrument's intentionally multidimensional structure across six needs-analysis aspects and the presence of several consensus items rather than random measurement error, but it nonetheless means the instrument was not formally piloted as a single separate step prior to full-scale distribution.

Future studies employing this instrument are encouraged to conduct a dedicated pre-distribution pilot and to report reliability separately for each thematic aspect. Future research should also address these limitations through Research and Development (R&D) studies that design, implement, and evaluate infrastructure or training interventions targeting the projector gap identified here, or through experimental or quasi-experimental studies that compare the actual learning impact

of PowerPoint- versus Canva-based instruction on measurable child outcomes, ideally using larger and more geographically diverse samples.

In light of the findings, several concrete strategies are proposed: the Ministry of Religious Affairs should (1) prioritize the gradual acquisition of projectors/LCDs for the 50% of schools that lack them; (2) create a structured training program with a focus on Canva (90% preference) while maintaining PowerPoint literacy; (3) establish a technical support system through a network of teacher mentors, closing the current 40% institutional-support gap; (4) involve teachers in decision-making on facility procurement according to actual needs in the field; and (5) promote collaboration in the creation of digital content that incorporates Islamic values and best practices in early childhood education. In keeping with the Merdeka Curriculum's mission, this multi-level intervention is essential to ensuring that children in RA institutions have equitable access to technology-enriched learning.

ACKNOWLEDGEMENT

The researchers would like to sincerely thank everyone who helped complete this study. The 20 RA teachers from five institutions in three districts in Jambi Province — RA Baiturrahim, RA Keluarga Sakinah, RA Quhas Kindergarten, RA Nurul Yaqin, and RA Dharma Wanita Persatuan in Tanjung Jabung Barat, Kota Jambi, and Muaro Jambi — are especially thanked for their insightful participation and willingness to share their experiences with the use of digital presentation media. Without their collaboration and dedication to developing instructional technology in early childhood Islamic education, this project would not have been feasible.

REFERENCES

- Aminah, S., Aditya, A., & Kanthi, Y. A. (2024). The role of UTAUT2 in understanding technology adoption: A study of the Merdeka Mengajar platform among Indonesian teachers. *Teknika*, 13(3), 456–468. <https://doi.org/10.34148/teknika.v13i3.1082>
- Badrus Sholeh, M., Kamsan, N., & Aliyah, H. (2023). Persepsi guru terhadap implementasi Kurikulum Merdeka di madrasah. *Tafaqquh: Jurnal Penelitian dan Kajian Keislaman*, 11(2), 273–287. <https://doi.org/10.52431/tafaqquh.v11i2.2245>
- Blackwell, C. K., Lauricella, A. R., & Wartella, E. (2014). Factors influencing digital technology use in early childhood education. *Computers & Education*, 77, 82–90. <https://doi.org/10.1016/j.compedu.2014.04.013>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). Sage Publications.

- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Dong, C. (2018). Young children's use of ICT in Shanghai preschools. *Asia-Pacific Journal of Research in Early Childhood Education*, 10(3), 97–123.
- Dong, C., & Mertala, P. (2021). It is a tool, but not a 'must': Early childhood preservice teachers' perceptions of ICT and its affordances. *Early Years*, 41(5), 540–555. <https://doi.org/10.1080/09575146.2019.1627293>
- Dong, C., & Newman, L. (2016). Ready, steady... pause: Integrating ICT into Shanghai preschools. *International Journal of Early Years Education*, 24(2), 224–237. <https://doi.org/10.1080/09669760.2016.1144048>
- Dong, C., & Newman, L. (2018). Enacting pedagogy in ICT-enabled classrooms: Conversations with teachers in Shanghai. *Technology, Pedagogy and Education*, 27(4), 499–511. <https://doi.org/10.1080/1475939X.2018.1517660>
- Edwards, S., Straker, L., & Oakey, H. (2018). Statement on young children and digital technologies. *Australasian Journal of Early Childhood*, 43(4), 73–75. <https://doi.org/10.23965/AJEC.43.4.08>
- Erdiyanti, & Syukri, S. (2021). Peningkatan kompetensi guru PAUD non PG-PAUD melalui pendampingan pembuatan media pembelajaran di Kecamatan Konda. *Murhum: Jurnal Pendidikan Anak Usia Dini*, 2(1), 68–79. <https://doi.org/10.37985/murhum.v2i1.34>
- Forsling, K. (2023). Collegial learning and digital literacy education in a Swedish preschool. *Early Childhood Education Journal*, 51(1), 139–148. <https://doi.org/10.1007/s10643-021-01289-9>
- Hatzigianni, M., & Kalaitzidis, I. (2018). Early childhood educators' attitudes and beliefs around the use of touchscreen technologies by children under three years of age. *British Journal of Educational Technology*, 49(5), 883–895. <https://doi.org/10.1111/bjet.12649>
- Hilmiyati, H., & Juhji, J. (2024). The effect of using Canva on elementary school students' interest in learning. *Journal of Innovative Basic Education*, 10(2), 90–102.
- Hinchcliff, M., & Mehmet, M. (2023). Embedding Canva into the marketing classroom: A dialogic and social learning approach to classroom innovation. *Higher Education, Skills and Work-Based Learning*, 13(6), 1174–1186. <https://doi.org/10.1108/HESWBL-11-2022-0230>
- Hiniker, A., Sobel, K., Suh, H., Sung, Y. C., Lee, C. P., & Kientz, J. A. (2015). Texting while parenting: How adults use mobile phones while caring for children at the playground. *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, 727–736. <https://doi.org/10.1145/2702123.2702199>
- Hutchinson, T., & Waters, A. (1987). *English for specific purposes: A learning-centred approach*. Cambridge University Press.
- Iivari, N., Sharma, S., & Ventä-Olkkonen, L. (2020). Digital transformation of everyday life: How COVID-19 pandemic transformed the basic education of the young generation and why information management research should

- care? *International Journal of Information Management*, 55, 102183. <https://doi.org/10.1016/j.ijinfomgt.2020.102183>
- Kemendikbudristek. (2022). *Kurikulum Merdeka*. Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi Republik Indonesia.
- Kerckaert, S., Vanderlinde, R., & van Braak, J. (2015). The role of ICT in early childhood education: Scale development and research on ICT use and influencing factors. *European Early Childhood Education Research Journal*, 23(2), 183–199. <https://doi.org/10.1080/1350293X.2015.1016804>
- Konca, A. S., & Tantekin Erden, F. (2021). Digital technology (DT) usage of preschool teachers in early childhood classrooms. *Journal of Education and Future*, 19, 1–12. <https://doi.org/10.30786/jef.627809>
- Kristy, R., Adams, J., & Taylor, S. (2024). Canva as a collaborative infographic tool in elementary sociology classrooms. *Journal of Digital Learning*, 15(2), 78–90.
- Lim, B. Y., Lake, V. E., Beisly, A. H., & Ross-Lightfoot, R. K. (2024). Preservice teachers' TPACK growth after technology integration courses in early childhood education. *Early Education and Development*, 35(1), 114–131. <https://doi.org/10.1080/10409289.2023.2224219>
- Lim, J., & Wardrip, P. (2024). Technology integration as a spectrum: Integrating technology in early childhood classrooms. *Teachers and Teaching: Theory and Practice*. <https://doi.org/10.1080/13540602.2024.2420137>
- Liu, X., & Hwang, G. J. (2023). Trends and research issues of digital game-based learning for early childhood education: A review of academic publications. *Interactive Learning Environments*. <https://doi.org/10.1080/10494820.2023.2177392>
- Luo, W., Berson, I. R., & Berson, M. J. (2021). Integration of digital technology into an early childhood teacher preparation program in China. *Early Childhood Education Journal*, 49(6), 1165–1175. <https://doi.org/10.1007/s10643-020-01115-8>
- Masoumi, D. (2021). Situating ICT in early childhood teacher education. *Education and Information Technologies*, 26(3), 3009–3026. <https://doi.org/10.1007/s10639-020-10399-3>
- McManis, L. D., & Gunnewig, S. B. (2012). Finding the education in educational technology with early learners. *Young Children*, 67(3), 14–24.
- Mertala, P. (2019). Teachers' beliefs about technology integration in early childhood education: A meta-ethnographical synthesis of qualitative research. *Computers in Human Behavior*, 101, 334–349. <https://doi.org/10.1016/j.chb.2019.08.003>
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054. <https://doi.org/10.1111/j.1467-9620.2006.00684.x>
- Moore, S. L., & Tillberg-Webb, H. K. (2023). *Ethics and educational technology: Reflection, interrogation, and design as a framework for practice*. Routledge. <https://doi.org/10.4324/9781003244691>
- Moss, G., Jewitt, C., Levacić, R., Armstrong, V., Cardini, A., & Castle, F. (2007). The interactive whiteboards, pedagogy and pupil performance evaluation: An

- evaluation of the Schools Whiteboard Expansion (SWE) project: London challenge (Research Report 816). Department for Education and Skills.
- Nikolopoulou, K., & Gialamas, V. (2016). Barriers to ICT use in high schools: Greek teachers' perceptions. *Journal of Computers in Education*, 3(1), 59–75. <https://doi.org/10.1007/s40692-015-0052-z>
- Oriji, A., & Nnadiye, G. C. (2023). Examining lecturers' computer literacy/competency level and the integration of Microsoft PowerPoint software in teaching-learning in the University of Port Harcourt Faculty of Education. *International Journal of Progressive Sciences and Technologies*, 38(1), 259–273. <https://doi.org/10.52155/ijpsat.v38.1.5234>
- Otterborn, A., Schönborn, K., & Hultén, M. (2020). Investigating preschool educators' implementation of computer programming in their teaching practice. *Early Childhood Education Journal*, 48(3), 253–262. <https://doi.org/10.1007/s10643-019-00976-y>
- Palaigeorgiou, G., & Papadopoulou, A. (2019). Promoting self-paced learning in the elementary classroom with interactive video, an online course platform and tablets. *Education and Information Technologies*, 24(1), 805–823. <https://doi.org/10.1007/s10639-018-9804-5>
- Plowman, L., Stephen, C., & McPake, J. (2010). *Growing up with technology: Young children learning in a digital world*. Routledge.
- Prakoso, B. H., Ramdani, Z., & Rahmah, B. (2021). Teacher's perception on Merdeka Belajar policy. *Indonesian Journal of Educational Assessment*, 3(2), 128–137.
- Radesky, J. S., Schumacher, J., & Zuckerman, B. (2015). Mobile and interactive media use by young children: The good, the bad, and the unknown. *Pediatrics*, 135(1), 1–3. <https://doi.org/10.1542/peds.2014-2251>
- Rahmawati, L. (2021). Development of interactive visual media for early childhood. *Journal of Early Childhood Education*, 10(2), 88–97.
- Risianti, A., Putri, D., & Wahyudi, E. (2024). Digital literacy challenges in the implementation of PMM for PAUD teachers. *Jurnal Ilmiah Pendidikan Anak Usia Dini*, 9(2), 145–159. <https://doi.org/10.31004/paud-edu.v9i2.2364>
- Rohman, M., & Mulyana, N. (2023). Ketimpangan gender guru di taman kanak-kanak dan sekolah dasar di Indonesia. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 7(3), 2794–2805. <https://doi.org/10.31004/obsesi.v7i3.4530>
- Safitri, N. (2024). Literasi digital guru PAUD dalam pemanfaatan platform Merdeka Mengajar. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 8(1), 51–63.
- Schmid, M., Brianza, E., Mok, S. Y., & Petko, D. (2024). Running in circles: A systematic review of reviews on technological pedagogical content knowledge (TPACK). *Computers & Education*, 214, 105024. <https://doi.org/10.1016/j.compedu.2024.105024>
- Spector, J. M. (2016). Ethics in educational technology: Towards a framework for ethical decision making in and for the discipline. *Educational Technology Research and Development*, 64(5), 1003–1011. <https://doi.org/10.1007/s11423-016-9483-0>

- Su, J., Zhong, Y., & Chen, X. (2023). Technology education in early childhood education: Systematic review. *Interactive Learning Environments*. <https://doi.org/10.1080/10494820.2022.2160470>
- Taimalu, M., & Luik, P. (2019). The impact of beliefs and knowledge on the integration of technology among teacher educators: A path analysis. *Teaching and Teacher Education*, 79, 101–110. <https://doi.org/10.1016/j.tate.2018.12.012>
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53–55. <https://doi.org/10.5116/ijme.4dfb.8dfd>
- Toklu, H., & Hursen, C. (2021). Needs analysis for curriculum development in higher education. *Higher Education Studies*, 11(1), 72–85. <https://doi.org/10.5539/hes.v11n1p72>
- Undheim, M. (2022). Children and teachers engaging together with digital technology in early childhood education and care institutions: A scoping review. *European Early Childhood Education Research Journal*, 30(3), 472–489. <https://doi.org/10.1080/1350293X.2022.2078606>
- Voogt, J., & McKenney, S. (2017). TPACK in teacher education: Are we preparing teachers to use technology for early literacy? *Technology, Pedagogy and Education*, 26(1), 69–83. <https://doi.org/10.1080/1475939X.2016.1174730>
- Wahyono, W., Wahyudi, A. B. E., Salimi, M., Hidayah, R., Fajari, L. E. W., & Wijaya, T. T. (2024). Implementation of the Kurikulum Merdeka in mathematics learning at elementary schools. *Jurnal Pendidikan Progresif*, 14(1), 544–560. <https://doi.org/10.23960/jpp.v14.i1.202440>
- Warren, S., & Beck, D. (2023). The ethical choices with educational technology framework. In M. J. Spector, B. B. Lockee, & M. D. Childress (Eds.), *Learning, design, and technology*. Springer. https://doi.org/10.1007/978-3-319-17727-4_193-2
- Widianto, E. (2021). Pemanfaatan media pembelajaran berbasis teknologi informasi. *Journal of Education and Teaching*, 2(2), 213–222. <https://doi.org/10.24014/jete.v2i2.11707>
- Yelland, N. (2018). A pedagogy of multiliteracies: Young children and multimodal learning with tablets. *British Journal of Educational Technology*, 49(5), 847–858. <https://doi.org/10.1111/bjet.12635>