
Digital Content in Early Childhood Expressive Language Development: a Developmental Psychology Review in the Society 5.0

Era Konten Digital dalam Perkembangan Bahasa Ekspresif Anak Usia Dini: Tinjauan Psikologi Perkembangan di Era Society 5.0

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Abstract

Digital content use among young children is rising rapidly in the Society 5.0 era, while its impact on expressive language remains debated. This article aims to synthesize evidence on the relationship between digital content, communication technology, and children's expressive language development. The research is a library study using a narrative-integrative review approach that combines theoretical literature and empirical findings from the ERIC, Scopus, Google Scholar, and Garuda databases. Literature was purposively selected based on thematic relevance and analyzed using thematic analysis to build a coherent argument. The review is framed by three psychological lenses: developmental, social-emotional, and educational psychology. Findings show that passive content correlates negatively with expressive language through interaction displacement, whereas interactive, high-quality, adult-mediated media may support language development, with patterns differing by age group. The article recommends age-based content policies, strengthening ECCE teachers' digital-pedagogical competencies, and integrating Islamic values.

Keywords: digital media; early childhood language development; expressive language; narrative review; screen time

Abstrak

Penggunaan konten digital pada anak usia dini meningkat pesat di era Society 5.0, sementara dampaknya terhadap bahasa ekspresif masih diperdebatkan. Artikel ini bertujuan menyintesis bukti mengenai hubungan konten digital, teknologi komunikasi, dan perkembangan bahasa ekspresif anak. Jenis penelitian adalah studi kepustakaan dengan pendekatan tinjauan naratif-integratif yang memadukan literatur teoretis dan temuan empiris dari basis data ERIC, Scopus, Google Scholar, dan Garuda. Literatur dipilih secara purposif berdasarkan relevansi tematik, lalu dianalisis dengan analisis tematik untuk membangun argumen yang utuh. Tinjauan dibingkai oleh tiga lensa psikologi, yaitu psikologi perkembangan, sosial-emosional, dan pendidikan. Temuan menunjukkan konten pasif berkorelasi negatif dengan bahasa ekspresif melalui mekanisme displacement interaksi, sedangkan media interaktif dan berkualitas yang didampingi orang dewasa berpotensi mendukung perkembangan bahasa, dengan pola yang berbeda menurut kelompok usia. Artikel merekomendasikan kebijakan konten berbasis usia, penguatan kompetensi digital-pedagogis guru PAUD, serta integrasi nilai keislaman.

Kata kunci: bahasa ekspresif; media digital; perkembangan bahasa anak usia dini; tinjauan naratif; waktu layar

A. INTRODUCTION

A child's ability to express thoughts, feelings, and desires through words, known as expressive language, is one of the most crucial developmental milestones. Vygotsky emphasized that language is not merely a means of communication, but rather the most fundamental means of thinking (Vygotsky & Luria, 1978). Tomasello points out that a child's language development cannot be separated from social interactions, known as *joint attention*, namely the ability of children and adults to simultaneously pay attention to the same object while sharing experiences (Tomasello, 2019). It is in this situation that the first words are acquired and the foundations of linguistic competence are laid. The question is whether children's interactions with digital screens, which now occupy a large portion of their waking hours, can provide context *joint attention* which is equivalent to human interaction.

Cognitively, early childhood is in a unique phase. Piaget explained that children aged 0-2 years are in the sensorimotor stage, namely building knowledge through the senses and physical actions, then enter the preoperational stage at ages 2-7 years, which is marked by the development of symbolic or semiotic functions, namely the ability to make words or objects represent other things (Piaget, 1952). It is at this stage that language, pretend play, and imagination develop rapidly, although children's reasoning is still egocentric and not yet logical. The implications for digital content are quite fundamental: preoperational children learn best through manipulation of real objects and reciprocal interactions, not through passive viewing that they cannot control or actively respond to. Screens that present symbols without bodily involvement and social responses are less in line with the symbolic thinking that children are developing.

From a socio-emotional psychology perspective, a child's relationship with screens is inextricably linked to the quality of their relationship with their caregiver. Bowlby's attachment theory explains that children are driven to form an emotional bond with their primary caregiver as a secure base from which to explore the world (Bowlby, 1969), and Ainsworth suggests that the caregiver's sensitivity in responding appropriately and consistently to the child's signals is a key determinant of secure attachment (Ainsworth et al., 1978). Erikson complements this psychosocial perspective by stating that children go through stages *autonomy versus shame and doubt* at the age of 1-3 years and *initiative*

versus Guilt occurs at ages 3-6, a time when children learn to be independent and take initiative. The responsiveness of caregivers is both the engine of language acquisition and the pillar of independence. So, when screens replace the presence of caregivers, what's diminished isn't just exposure to words, but the quality of the relationships that support language, emotions, and independence.

The scientific evidence is quite consistent. The American Academy of Pediatrics asserts that children's digital experiences are shaped by an interconnected ecosystem, encompassing the characteristics of the child, caregivers, platform design, and social systems, so that media issues cannot be reduced to mere screen time limits (American Academy of Pediatrics, 2026). This is not an anti-technology stance, but rather a recognition that children's developing brains require stimulation most efficiently provided by warm, responsive, and contingent human interactions.

While this debate was going on, the world entered *Society 5.0*, a society that deeply integrates the physical and cyber worlds, with artificial intelligence, the Internet of Things, big data, and robotics becoming integral parts of everyday life, including the lives of children. Questions about digital content and children's language are no longer optional, but rather issues that must be addressed by every early childhood education institution, teacher, and parent.

For Early Childhood Islamic Education (PIAUD) institutions in Indonesia, this challenge has an additional layer: how to ensure that the adoption of technology does not erode the Islamic and humanitarian values that are the foundation of Islamic education. Abuddin Nata emphasized that the challenge of Islamic education in the technological era lies in how to utilize technology to strengthen, rather than weaken, the humanitarian and faith values that are at the heart of Islamic education (Nata, 2016).

From an early childhood education (PAUD) pedagogical perspective, this issue needs to be addressed through the framework of Developmentally Appropriate Practice (DAP), which emphasizes that learning decisions must be grounded in knowledge of child development, individual characteristics, and sociocultural contexts (NAEYC, 2022). In the Indonesian context, this principle aligns with the Child Development Achievement Level Standards (STPPA) and the Independent Curriculum for PAUD in the Foundation Phase,

which positions language achievement as a key element fostered through meaningful play, rather than passive screen exposure. This pedagogical reading is crucial so that discussions do not stop at a purely psychological perspective but connect to real-world practices in PAUD settings.

It's also important to emphasize that digital technology is not inherently negative. Numerous studies have shown that pedagogically designed interactive media, video calls that maintain social contingency, and educational apps with meaningful feedback can support children's vocabulary acquisition and engagement. Therefore, the relevant question is not whether technology is good or bad, but rather under what conditions it supports or hinders children's expressive language development.

Based on the literature search, most previous studies tend to discuss the impact of screens in general or focus on one type of intervention, and rarely synthesize evidence across content types while linking it to the psychological framework and pedagogical context of Indonesian PAUD *in era Society 5.0*. This is where the gap in the study (*research gap*) this research is located. Novelty (*novelty*) This article focuses on integrating three psychological lenses—developmental, social-emotional, and educational—with an early childhood education (PAUD) pedagogical framework. Its theoretical contribution is a conceptual model that links digital content characteristics with language outcomes through psychological mediators, while its practical contribution is implementation recommendations for PAUD and PIAUD teachers.

To ensure a focused discussion, several key terms need to be operationally defined. Expressive language is defined as a child's ability to produce and convey thoughts, feelings, and desires through words, phrases, and sentences, as evidenced by the richness of vocabulary and the complexity of speech. Digital content refers to all material children access through screens, whether in the form of videos, apps, or games. This content is divided into passive content, which is one-way material that does not require a child's response, such as video viewing, and interactive content, which is material that requires and responds to a child's response, such as video calls or adaptive apps. This distinction is important because, as will be shown, the type of content determines more impact than simply the duration of use.

This study is guided by three interrelated focuses. The first concerns how digital content influences expressive language development in early childhood and the mechanisms that explain this relationship. The second examines whether all types of digital communication technology negatively impact children's verbal communication development, or whether the impact differs based on the type and method of use. The third focuses on identifying the challenges faced by early childhood education institutions in responding to these demands. *era Society 5.0* and formulate appropriate responses without sacrificing the child's developmental well-being.

B. RESEARCH METHODS

This study uses a literature study method (*library research*) with a narrative-integrative review approach (*narrative-integrative review*) referring to Torracco (2005) and Snyder (2019). This approach was chosen because the study does not intend to calculate effect sizes statistically, but rather to weave theoretical literature and diverse empirical findings into a coherent argument while generating a new conceptual framework. Torracco (2005) emphasized that an integrative review is valuable only if it goes beyond describing the literature, but generates new knowledge through critical analysis and synthesis. Similarly, Snyder (2019) considers this approach suitable for interdisciplinary, emerging studies, where findings from various fields need to be woven into a more comprehensive understanding. Unlike systematic reviews, which require repeated screening procedures in mature fields, narrative-integrative reviews open up space for interpretation and conceptual synthesis across scientific traditions (Snyder, 2019).

A literature search was conducted through the ERIC, Scopus, Google Scholar, and Garuda databases, prioritizing publications from the last ten years without neglecting classic works that serve as theoretical foundations. Keywords used included digital content, *screen time*, expressive language, language development, and early childhood, along with their Indonesian equivalents: digital content, screen time, expressive language, and early childhood. The search was iterative, meaning that important references found in one article were further explored (*snowballing*).

The literature was selected purposively based on thematic relevance to the three focuses of the study, namely the relationship between digital content and expressive language, the role of communication technology, and the challenges of PAUD in the era of *Society 5.0*. Selection considerations included the topic's suitability for early childhood, the clarity of theoretical or empirical contributions, and the credibility of the sources. Analysis was conducted using thematic analysis following Braun and Clarke's (2006) six stages: repeated reading of the literature to identify the data, initial coding of key ideas, searching for and reviewing themes, defining themes, and then presenting them in a report. Synthesis aimed to compare, contrast, and integrate findings from various sources to produce a more complete understanding than each source alone (Torraco, 2005).

C. RESULTS AND DISCUSSION

This review draws its analysis from approximately thirty primary sources, comprising classic theoretical works, institutional policies and guidelines, and recent empirical studies from both international and Indonesian contexts. Before the thematic presentation, Table 1 presents a synthesis matrix of key empirical studies that form the backbone of the analysis. This matrix is representative of the variety of designs and findings reviewed, not an exhaustive enumeration of the entire literature cited.

Table 1. Synthesis Matrix of the Main Studies Reviewed

Author (Year)	Design	Subject/ Source	Focus	Key Findings
Zimmerman dkk. (Zimmerman et al., 2007)	Survey	Children 8-16 months	Baby videos	Each hour of baby videos related to vocabulary is less
Strouse & Troseth (2008)	Experiment	News	I see a problem.	Learn from weak videos under 3 years old
Roseberry et al. (2014)	Experiment	Children 2-3 years old	Live video	Social contingencies enable word learning
Hirsh-Pasek et al. (2015)	Review	Kids app	Application quality	Four conditions for media to support learning

Author (Year)	Design	Subject/ Source	Focus	Key Findings
Mendelsohn et al. (2018)	Cohort	Preschooler	Reading aloud	Reading books is the most effective way to learn language
Dore dkk. (2019)	Experiment	US Preschool	Educational games	Pedagogical games support vocabulary
Madigan dkk. (2020)	Meta-analysis	42 studies	Screen time	High duration negative; co-viewing positive
Rayce dkk. (2024)	Large survey	News	Mobile devices	Screen time related to language is weaker

Source: Compiled from reviewed studies (2007–2026). The matrix is representative.

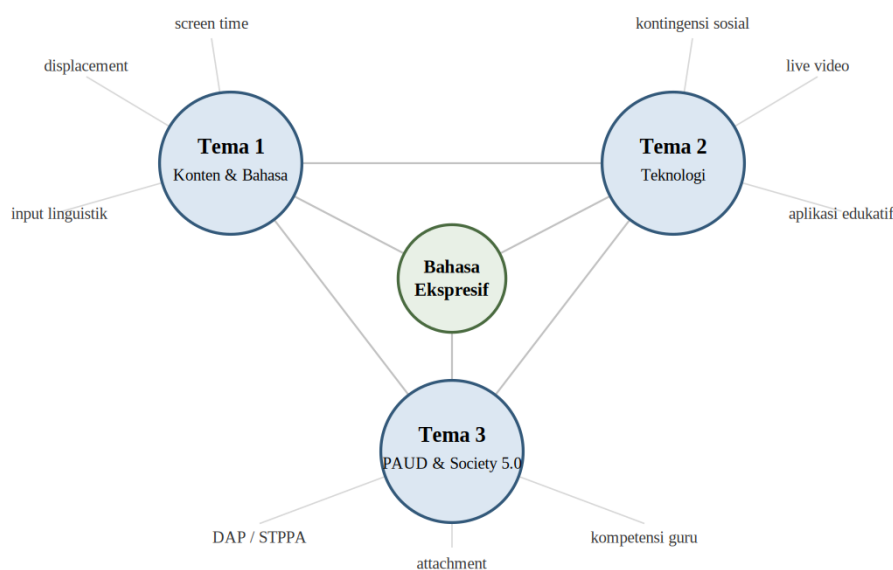


Figure 1. Thematic Cluster Map of Literature Synthesis Results

Before discussing the impact of digital content, it's important to first understand how children's expressive language develops under optimal conditions. From a developmental psychology perspective, language skills develop through relatively regular stages. At around two to four months of age, children begin to produce repetitive vowel sounds (*cooing*), then around six to ten months enter the babbling phase with a series of consonants and vowels (*babbling*). Approaching the age of one year, the first words appear which often represent a

complete idea (*holophrastic*), followed by concise two-word utterances at around two years of age (*telegraphic speech*). Next, between the ages of three and six, there is an explosion of vocabulary and grammar mastery, enabling children to construct increasingly complex sentences. These stages are not simply a biological sequence, but rather depend heavily on the quality of language input and interactions a child receives at each stage (Tomasello, 2019).

Bloom and Tinker describe language development as a process driven by what they call *intentionality model*. Children do not learn to speak because they are forced or trained, but because they have something they want to express and find that words are the most effective tool for that purpose (Bloom & Tinker, 2001)

Chomsky, from a different perspective, asserts that humans are born with *Language Acquisition Device* (LAD), an innate cognitive mechanism that enables children to absorb, process, and produce language at a rate far exceeding general learning abilities (Chomsky, 2000). However, this LAD cannot operate in a vacuum, no matter how sophisticated. It requires raw material in the form of rich, varied, and contextually meaningful linguistic input. Hart and Risley in their classic study, known as '*30 million word gap*' proved that the quality and quantity of language input received by children in the first three years of life is the strongest predictor of vocabulary, reading ability, and even academic achievement in elementary school (Hart & Risley, 1995)

In the context of expressive language development, the main key is *contingent responsiveness*, namely an adult's response that is timely, on-point, and directly responds to what the child is expressing. When an 18-month-old child points to a dog and says "that!" and his mother immediately responds, "Yes, that's a dog, it's brown, and it's running," the child not only learns the words "dog," "brown," and "running." He also learns that communication is an effective and enjoyable activity. From a motivational psychology perspective, such experiences foster intrinsic motivation for language. Self-determination theory explains that intrinsic motivation grows when three basic psychological needs are met: autonomy, competence, and relatedness (Ryan & Deci, 2020). In language experiences, all three are evident: the child feels autonomy when their communication initiatives are valued and responded to, competence when their attempts to speak successfully elicit

meaningful responses, and connection through the warmth of the relationship with the caregiver. The caregiver's warm response fulfills all three simultaneously, so the repetition of thousands of such interactions is what builds a child's expressive language competence. In contrast, passive content cannot provide these three needs because the screen does not respond to the child's initiative in a tangible way.

Digital Content Disrupts Mechanisms

Zimmerman, Christakis, and Meltzoff, in a classic study, found that each additional hour of watching baby videos (Baby Einstein and similar) by children aged 8-16 months was associated with a vocabulary of seventeen words smaller (Zimmerman et al., 2007). Recent evidence supports these findings. A meta-analysis of dozens of studies shows that higher screen time is negatively correlated with children's language skills, while high-quality educational content and co-viewing are actually associated with stronger language skills (Madigan et al., 2020). A large-scale survey of toddlers also found an association between mobile screen time and poorer language development (Rayce et al., 2024). A similar pattern is seen in the Indonesian context. A quantitative study in early childhood found a strong correlation between high screen time intensity and increased potential for tantrums and developmental delays, including language (Setyarini et al., 2023). These findings confirm that concerns about passive content are not just a Western issue but are also relevant to the reality of Indonesian children, whose access to devices is rapidly increasing.

The explanation for these findings lies not in the direct "damage" caused by digital content, but rather in displacement. Every hour spent in front of a screen is an hour not spent in verbal interaction with a human caregiver. Every hour without rich verbal interaction means thousands of missed opportunities to build expressive language connections. In neuroscientific terms, synapses that should be formed are not formed.

Suyadi in his study of child development neuroscience emphasized that at the age of 0-3 years, Broca's and Wernicke's areas in the brain, the two most crucial areas for language production and understanding, experience a period of *sensitive period* that will not be repeated (Suyadi, 2014). The quality of language input a child receives during this period literally determines the number of neural connections formed in these two areas. Passive

digital content, where children are mere spectators without the opportunity to respond, ask questions, or receive a response to their verbal initiatives, does not provide the type of stimulation needed during this sensitive period.

Not All Screens Are the Same: Impact Differences Based on Content Type

Different types of content produce significantly different effects. Roseberry, Hirsh-Pasek, and Golinkoff found that 2- to 3-year-olds can learn new words from live video interactions (*Skype or Zoom*) with strangers, but could not learn the same words from videotaped recordings featuring the same people (Roseberry et al., 2014). The difference lies in *social contingency*. In live video, the person on screen responds in real time to what the child does and says, whereas in recorded video, such responses are absent.

Hirsh-Pasek and colleagues identified four conditions that must be met for digital media to support early childhood learning: active rather than passive interaction, focused rather than fragmented engagement, meaningful learning connected to the child's real experiences, and meaningful social interaction (Hirsh-Pasek et al., 2015). These four conditions are simultaneously easiest to meet in direct human interaction and most difficult to meet in the streaming video content format that currently dominates early childhood media consumption.

Robb warns that short-form video platforms that use algorithms to maximize watch time, such as YouTube Kids, are structurally designed to serve overstimulating content with fast-moving images, loud sounds, and frequent scene changes (Robb, 2020). This type of content not only fails to support language development but also conditions children's brains to require increasingly high levels of stimulation, making slower-paced human interactions seem less engaging. Psychologically, this pattern shifts children's motivation from an intrinsic drive to interact to a reliance on immediate external reinforcement, a shift that, within the framework of self-determination theory, erodes the autonomy and connectedness that are the foundations of healthy learning (Ryan & Deci, 2000).

Table 2. Classification of Digital Content Based on Impact on Early Childhood Expressive Language

Content Type	Characteristics	Impact on Language	Recommendation
Passive video (streaming)	Non-interactive, high speed	Negative, displacement of verbal interaction	Strictly limit, < 30 min/day, age > 2 yrs
Structured educational videos	Consistent character, age-appropriate tempo	Neutral to slightly positive	May be 30-60 minutes, always accompanied
Live video call	Interactive, social contingency maintained	Neutral, equivalent to direct interaction	No restrictions if it is with known people
Interactive applications	Responsive to child input	A little positive if quality	30-45 min, choose DAP based
Fast content/algorithm	Overstimulation, non-narrative	Negative, atrophy of attention and language	Avoid completely < 5 years

Source: Adapted from AAP (2026), Madigan et al. (2020), and Hirsh-Pasek et al. (2015).

Analysis by Age Group

A cross-study synthesis shows that the impact of digital media varies significantly by age group, making recommendations difficult to standardize. These differences align with the developmental stages described by Piaget and Erikson. Children aged 0-2, who are in the sensorimotor stage and are developing basic attachments, are most susceptible to passive content because they learn through actions and relationships, not viewing. Children aged 3-4, in the early preoperational stage, are beginning to process symbols, so interactive media can be a limited complement. Children aged 5-6, whose symbolic functions are more mature and are developing initiative, can utilize quality media more productively if given guidance.

Table 3 summarizes these patterns for the three age groups relevant to early childhood education.

Table 3. Digital Media Impact Patterns Based on Age Group

Age Group	Characteristics of Language Development	Implications of Media Use
0–2 years	Broca-Wernicke's sensitive period; completely dependent on contingent interaction and attachment	Avoid passive screens; only contingent video calls are tolerable.
3–4 years	Vocabulary explosion; video deficit begins to weaken	Structured educational media with support can be a complement, not a substitute.
5–6 years	Complex sentences; able to learn from quality videos	DAP-based interactive applications can be supportive if they are limited and targeted.

Source: *Synthesized from Strouse & Troseth (2008) Roseberry et al. (2014),*

Suyadi(2014)dan AAP (2026).

Synthesis and Discussion of Cross-Findings

The synthesis in the results section reveals a common thread: the determining factor in media impact is not the screen itself, but rather the presence or absence of social contingencies and adult support. Studies highlighting negative impacts, such as Zimmerman et al. (2007), Madigan et al. (2020), and Rayce et al. (2024), generally observed passive media consumption in naturalistic settings, thus capturing displacement effects. In contrast, studies finding neutral or positive impacts, such as Roseberry et al. (2014) and Dore et al. (2019), generally used interactive media in experimental settings. The discrepancies in results reflect differences in content type and research design rather than contradictory findings. Evidence from Indonesia supports this reading, for example, the finding that high screen time is associated with suboptimal social-emotional development in children (Nuraini & Wardhani, 2023). Read through a developmental psychology framework, this pattern confirms that media only supports development when it aligns with how children learn at their stage: through action, responsive relationships, and opportunities for initiative, rather than one-way exposure that replaces these experiences.

Opportunities of Educational Technology for Language Development

Since the title of this study is not aimed at concluding solely on negative impacts, the technological opportunities need to be discussed equally. Evidence suggests that *video call* that maintain social contingency can be a means for children to learn new words (Roseberry et al., 2014), pedagogically designed applications can support preschool vocabulary (Dore et al., 2019), and active co-viewing is associated with stronger language skills (Madigan et al., 2020). In the Indonesian context, a study in the Raudhah Journal shows that strengthening healthy literacy from an early age can increase the positive benefits of technology use while reducing its negative impacts (Daulay et al., 2023), while varied teacher strategies have been shown to support children's speaking skills (Karim, 2022). The use of structured audio-visual media, for example in learning to read and memorize the Qur'an using the Ummi method in early childhood, also shows that technology can support learning when applied in a directed manner and accompanied by educators (Anshary et al., 2025). In other words, educational technology that meets the requirements of interactivity, engagement, meaningfulness, and social authenticity, and is supported by the role of teachers, can be a valuable complement, not a threat.

The conceptual model in Figure 2 summarizes these relationships. The characteristics of digital content influence expressive language outcomes not directly, but through three psychological mediators: responsiveness and attachment, joint attention and the quality of linguistic input, and intrinsic motivation. The entire process takes place within an ecological context. *Society 5.0* involving families, early childhood education institutions, and policies.

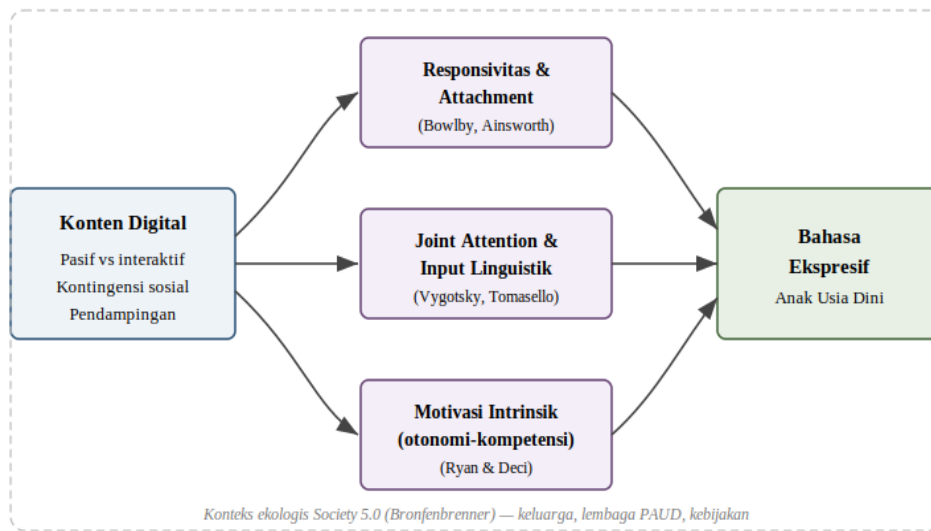


Figure 2. Conceptual Model of the Relationship between Digital Content, Psychological Mediators, and Expressive Language

Practical Implications for Early Childhood Education and Early Childhood Education Teachers

Before being translated into practice, these findings need to be linked to the regulatory framework for early childhood education (PAUD) in Indonesia. The Child Development Achievement Level Standards (STPPA) place language as one of the developmental areas, with outcomes including the ability to understand receptive language, express language expressively, and early literacy. These outcomes, by their nature, can only be fostered through rich language interactions, so passive content that cuts off interaction is counterproductive to this goal. In the Independent Curriculum in the Foundation Phase, learning outcomes also emphasize children using language to communicate and building engagement through meaningful play activities. The principle *Developmentally Appropriate Practice* reinforces this by requiring that learning decisions be based on child development, individual uniqueness, and cultural context. Thus, the synthesis of evidence in this study aligns with and reinforces the direction of national early childhood education regulations.

Based on this connection, teachers can apply several practical implications. First, they should position digital media as a tool that is always accompanied, not a substitute for interaction, for example by watching together and then inviting children to retell the content to enrich expressive language. Second, media selection should refer to the principles of DAP and the language achievements in the Foundation Phase of the Freedom Curriculum, prioritizing media that requires active responses from children. Third, teachers can design conversation-based media activities, such as *video call* with resource persons or recording children's stories, so that social contingency is maintained. Fourth, ECE teachers can integrate Islamic values by selecting content that fosters good communication manners. Fifth, institutions need to develop duration and guidance guidelines that involve parents to ensure messages at school and at home are aligned.

Communication Technology and Verbal Development

One common misconception in discussions about screens and children is to equate all uses of digital communication technology with equal impact. However, as shown in the previous section, the difference between watching a recorded video and interacting via video call is fundamental from a language development perspective.

Strouse and Troseth in their research on the phenomenon '*I see nothing*', namely, a decline in learning ability from videos compared to live interactions, found that this phenomenon was strongest in children under 3 years of age and weakened with age (Strouse & Troseth, 2008). In children over 4 years of age, the difference between learning from high-quality videos and learning from live interactions was much smaller. This suggests that recommendations for digital media use cannot be monolithic but must be differentiated based on age and type of use.

Dore and his fellow researchers found that *game mobile* pedagogically designed materials can support preschool vocabulary learning, provided that *game* These content should be consistent in nature, provide meaningful feedback, and provide opportunities for active response (Dore et al., 2019). These requirements are far from the majority of content children consume in everyday practice, but they provide useful guidelines for developing more responsible digital content.

In contrast, Mendelsohn and colleagues found that reading aloud remains the single most effective intervention for early childhood language development, surpassing any educational app (Mendelsohn et al., 2018). This advantage arises because reading aloud naturally combines all the optimal conditions: face-to-face interaction, joint attention, contingent responses, vocabulary introduction in meaningful contexts, and emotional warmth that strengthens children's motivation to communicate.

Challenges of Early Childhood Education in *Era Society 5.0*

Draft *Society 5.0* formulated by Japan is different from *Industry 4.0* in one fundamental way. *Society 5.0* explicitly places humans, not technology, at the center (Gladden, 2019). If *Industry 4.0* focuses on automation and production efficiency, *Society 5.0* focuses on how technology can be used to solve social problems and improve the quality of life for all people. The implication for early childhood education is that technology should serve children's development, not the other way around.

However, the transition to *Society 5.0* also brings real challenges. Schwab warned that the exponential pace of technological change in the fourth industrial revolution, which is the backbone of *Society 5.0*, produces 'disruptive disruption' that affects all levels of society, including even the youngest children (Schwab, 2016). This change is too rapid to be responded to with reactive education policies, so an anticipatory and long-term approach is needed.

Based on the literature synthesis, there are at least five specific challenges faced by PAUD institutions in responding to *era Society 5.0*. The first challenge is the digital divide among educators, as many early childhood education (PAUD) educators, especially in remote areas and institutions with limited funding, are still unfamiliar with technology (Latip, 2020). The second challenge is the lack of a ready curriculum, as the PAUD curriculum, based on Ministerial Regulation No. 137 of 2014, was designed before the current era of digital transformation (KEMENDIKBUD RI, 2014). The third challenge is pressure from parents and the market that uses 'technology' as a misleading signal of quality. The fourth challenge is the lack of research based on the Indonesian context. The fifth challenge is the pedagogical identity crisis. Amalia and Munif found that the PIAUD

institutions that most successfully responded to the demands *Society 5.0* is actually strengthening, not replacing, scientifically proven approaches (Amalia & Munif, 2023).

From the perspective of ecological developmental psychology, Bronfenbrenner reminds us that child development always occurs in the context of interconnected relationships and systems (Bronfenbrenner, 1979). Response to challenges *Society 5.0* cannot be implemented by early childhood education institutions alone, as it requires alignment between the microsystem, mesosystem, and macrosystem. The introduction of digital technology into the family microsystem, for example, will ripple throughout the system and influence the relationship patterns that support children's psychological development. NAEYC, in the latest edition of its guide on *Developmentally Appropriate Practice*, emphasizing the principles that should be the compass in responding *Society 5.0*, namely that any technology is only suitable for use in an ECE context if it supports, not replaces, warm and meaningful human interactions (NAEYC, 2022).

Ramayulis, from an Islamic educational perspective, adds a dimension absent from conventional educational technology discourse: that true education is one that develops all dimensions of humankind in a balanced manner, encompassing the physical, intellectual, spiritual, and social dimensions (Ramayulis, 2013). This framework inherently rejects technological reductionism, which measures educational success solely by mastery of digital competencies.

The developmental psychology perspective on the central role of caregivers aligns with the concept of *fitrah* in Islamic education. A hadith narrated by Bukhari and Muslim from Abu Hurairah states that every child is born in a state of *fitrah*, and it is the parents who then shape the direction of their development. Read in the context of this study, *fitrah* encompasses innate potential, including language and social skills, the actualization of which depends heavily on the quality of interactions provided by the child's immediate environment. When passive screens replace the responsive presence of parents, not only language acquisition but also the process of cultivating *fitrah* itself is threatened. From this perspective, the concept of *tarbiyah* as loving care and *ta'dib* as the instillation of *adab* places human interaction, not technology, at the heart of early childhood education. Technology is

thus positioned as a means subordinated to the goal of cultivating fitrah, not the other way around.

This study has several limitations. First, as a library study, conclusions depend on the quality and scope of the available literature, so publication bias cannot be completely avoided. Second, most of the empirical evidence comes from non-Indonesian contexts, so generalizations to the Indonesian cultural and linguistic context require caution. Third, the number of studies in the Indonesian context that specifically link digital content to expressive language is still limited. Fourth, the analysis is qualitative-thematic and therefore does not produce quantitative effect sizes. Fifth, the conceptual model proposed in this study is a synthesized theoretical proposition and has not been empirically tested, so the mediator pathways within it need to be verified through further research. These limitations also provide directions for future research, particularly empirical studies based in the Indonesian context that test the model.

D. CONCLUSIONS AND SUGGESTIONS

This study concludes that the impact of digital content on expressive language in early childhood is determined by social contingencies and mentoring, not by screens alone. Passive content is negatively correlated through *displacement* interaction, while interactive media, *video call* contingent, and quality educational applications accompanied by adults have the potential to support language development, with different patterns by age group. In *Society 5.0*, the right response is not to reject technology, but to manage it selectively and focus on children's psychological needs and the principles of PAUD pedagogy.

Four recommendations are proposed. First, the government needs to develop age-specific, evidence-based digital content policies for early childhood education (ECE). Second, ECE teacher training programs should integrate digital-pedagogical competencies as core competencies, including an understanding of children's psychological needs and the dynamics of caregiver-child relationships. Third, parents need concrete and accessible guidance on how to support their children in using digital media without sacrificing responsiveness and attachment. Fourth, Indonesian-based research examining the impact of

digital content on children's language and psychological development within the Indonesian cultural and linguistic context needs to be prioritized and adequately funded.

REFERENCE

- Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of Attachment: A Psychological Study of the Strange Situation*. Lawrence Erlbaum.
- Amalia, N. F., & Munif, M. (2023). Tantangan dan upaya pendidikan dalam menghadapi era Society 5.0. *MAANA: Jurnal Pendidikan Islam Anak Usia Dini*, 2(1), 1–13. <https://doi.org/10.52166/mjpiud.v2i1.4741>
- American Academy of Pediatrics, C. on C. and M. (2026). Digital ecosystems, children, and adolescents: Policy statement. *Pediatrics*, 157(2), e2025075320. <https://doi.org/10.1542/peds.2025-075320>
- Anshary, C., Suryana, D., & Mahyuddin, N. (2025). Evaluating the effectiveness of the Ummi method in memorizing Juz Amma for early childhood learners. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 9(2), 463–471. <https://doi.org/10.31004/obsesi.v9i2.6888>
- Bloom, L., & Tinker, E. (2001). The intentionality model and language acquisition. *Monographs of the Society for Research in Child Development*, 66(4), 1–91. <https://doi.org/10.1111/1540-5834.00169>
- Bowlby, J. (1969). *Attachment and Loss, Vol. 1: Attachment*. Basic Books.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Bronfenbrenner, U. (1979). *The Ecology of Human Development*. Harvard University Press.
- Chomsky, N. (2000). *The Architecture of Language*. Oxford University Press.
- Daulay, L. S., Mardianto, M., & Nasution, M. I. P. (2023). Literasi sehat untuk menjaga kesehatan mental anak di era digital. *Jurnal Raudhah*, 11(1). <https://doi.org/10.30829/raudhah.v11i1.2767>
- Dore, R. A., Shirilla, M., Hopkins, E., Collins, M., Scott, M., Schatz, J., & Zosh, J. M. (2019). Education in the app store: Using a mobile game to support U.S. preschoolers' vocabulary learning. *Journal of Children and Media*, 13(4), 452–471. <https://doi.org/10.1080/17482798.2019.1650788>
- Gladden, M. E. (2019). Who will be the members of Society 5.0? *Social Sciences*, 8(5), 148. <https://doi.org/10.3390/socsci8050148>

- Hart, B., & Risley, T. R. (1995). *Meaningful Differences in the Everyday Experience of Young American Children*. Paul H. Brookes Publishing.
- Hirsh-Pasek, K., Zosh, J. M., Golinkoff, R. M., Gray, J. H., Robb, M. B., & Kaufman, J. (2015). Putting education in educational apps. *Psychological Science in the Public Interest*, 16(1), 3–34. <https://doi.org/10.1177/1529100615569721>
- Karim, M. B. (2022). Strategi guru dalam meningkatkan kemampuan berbicara pada anak. *Jurnal Raudhah*, 10(2). <https://doi.org/10.30829/raudhah.v10i2.2037>
- Latip, A. (2020). Peran literasi media pada pembelajaran jarak jauh di masa pandemi COVID-19. *Eduteach: Jurnal Edukasi Dan Teknologi Pembelajaran*, 1(2), 107–115. <https://doi.org/10.37859/eduteach.v1i2.1956>
- Madigan, S., McArthur, B. A., Anhorn, C., Eirich, R., & Christakis, D. A. (2020). Associations between screen use and child language skills: A systematic review and meta-analysis. *JAMA Pediatrics*, 174(7), 665–675. <https://doi.org/10.1001/jamapediatrics.2020.0327>
- Mendelsohn, A. L., Cates, C. B., Weisleder, A., Berkule-Johnson, S. B., Seery, A. M., Canfield, C. F., & Dreyer, B. P. (2018). Reading aloud, play, and social-emotional development. *Pediatrics*, 141(5), e20173393. <https://doi.org/10.1542/peds.2017-3393>
- NAEYC. (2022). *Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth Through Age 8* (4th ed.). NAEYC.
- Nata, A. (2016). *Ilmu Pendidikan Islam*. Kencana Prenada Media.
- Nuraini, F., & Wardhani, J. D. (2023). Hubungan durasi bermain gadget dengan perkembangan sosial emosional anak. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 7(2), 2245–2256. <https://doi.org/10.31004/obsesi.v7i2.4198>
- Piaget, J. (1952). *The Origins of Intelligence in Children*. International Universities Press.
- Ramayulis. (2013). *Ilmu Pendidikan Islam*. Kalam Mulia.
- Rayce, S. B., Okholm, G. T., & Flensburg-Madsen, T. (2024). Mobile device screen time is associated with poorer language development among toddlers. *BMC Public Health*, 24, 1132. <https://doi.org/10.1186/s12889-024-18447-4>
- RI, K. P. dan K. (2014). *Peraturan Menteri Pendidikan dan Kebudayaan Nomor 137 Tahun 2014 tentang Standar Nasional Pendidikan Anak Usia Dini*. Kemendikbud.
- Robb, M. B. (2020). *Screen Time and Children: How Technology Affects Development*. Common Sense Media.
- Roseberry, S., Hirsh-Pasek, K., & Golinkoff, R. M. (2014). Skype me! Socially contingent interactions help toddlers learn language. *Child Development*, 85(3), 956–970.

<https://doi.org/10.1111/cdev.12166>

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective. *Contemporary Educational Psychology*, 61, 101860. <https://doi.org/10.1016/j.cedpsych.2020.101860>

Schwab, K. (2016). *The Fourth Industrial Revolution*. World Economic Forum.

Setyarini, D. I., Rengganis, S. G., Ardhiani, I. T., & Mas'udah, E. K. (2023). Analisis dampak screen time terhadap potensi tantrum dan perkembangan anak usia dini. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 7(2), 2496–2504. <https://doi.org/10.31004/obsesi.v7i2.3376>

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>

Strouse, G. A., & Troseth, G. L. (2008). “Don’t try this at home”: Toddlers’ imitation of new skills from people on video. *Journal of Experimental Child Psychology*, 101(4), 262–280. <https://doi.org/10.1016/j.jecp.2008.05.010>

Suyadi. (2014). *Teori Pembelajaran Anak Usia Dini dalam Kajian Neurosains*. PT Remaja Rosdakarya.

Tomasello, M. (2019). *Becoming Human*. <https://doi.org/10.2307/J.CTV24TR9W1>

Torraco, R. J. (2005). Writing integrative literature reviews: Guidelines and examples. *Human Resource Development Review*, 4(3), 356–367. <https://doi.org/10.1177/1534484305278283>

Vygotsky, L., & Luria, A. (1978). Tool and Symbol in Child Development. *Mind in Society*, 99–174. https://books.google.com/books/about/Mind_in_Society.html?hl=id&id=RxjjUefze_oC

Zimmerman, F. J., Christakis, D. A., & Meltzoff, A. N. (2007). Associations between media viewing and language development in children under age 2. *Journal of Pediatrics*, 151(4), 364–368. <https://doi.org/10.1016/j.jpeds.2007.04.071>