

Rethinking Developmentally Appropriate Practice Beyond Early Childhood: An Integrative Review of Its Implementation in Primary Education

Adi Apriadi Adiansha^{1,*} and Herlina Usman²

¹ Elementary School Teacher Education, STKIP Taman Siswa Bima, Bima, Indonesia

² Doctor of Elementary Education, Universitas Negeri Jakarta, Jakarta, Indonesia

Email: adiapriadiadiansha@gmail.com (A.A.A.); herlina@unj.ac.id (H.U.)

*Corresponding author

Abstract—Developmentally appropriate practice was formulated for children from birth through age eight, yet systematic evidence on its implementation remains dominated by early childhood settings. This study aimed to map the characteristics of research, strategies, outcomes, and challenges associated with implementing developmentally appropriate practice in primary education. An integrative review was conducted in two stages covering publications from 2016 to September 2026: bibliometric mapping of 667 Scopus records using VOSviewer, and content synthesis of studies identified through targeted searches of Scopus, ERIC, Google Scholar, and Garuda, complemented by citation searching. Fourteen eligible studies (nine empirical and five review or conceptual studies) were analysed through structured data extraction, quality appraisal with the Mixed Methods Appraisal Tool, and thematic synthesis based on the three core considerations of developmentally appropriate practice. The findings show that research is concentrated in the United States and in the early grades, with guided play, child-centred instruction, and developmentally sensitive curriculum planning as the dominant strategies. Reported outcomes include learning engagement, language and literacy development, early mathematics skills, and task switching as a component of executive function. The main challenges are academic pressure and standardised testing, the limited capacity of novice teachers, and a predominantly technical understanding of the framework. The review concludes that developmentally appropriate practice is relevant to primary education when positioned as a philosophical praxis that balances commonality, individuality, and context. Future research should test its implementation empirically in primary schools in non-Western countries, including Indonesia, using longitudinal designs and validated observation instruments.

Keywords—developmentally appropriate practice; primary education; guided play; integrative review; bibliometric analysis

Manuscript received September 21, 2026; revised October 18, 2026; accepted October 21, 2026

I. Introduction

Primary education is a decisive period for children's cognitive, social-emotional, linguistic, and physical development, as it is during this phase that learning habits and academic self-concept begin to take shape. The science of learning and development emphasises that such development is malleable and strongly shaped by the quality of the relationships and experiences children encounter at school (Cantor et al., 2019). Consequently, learning environments that are safe, relational, and responsive to individual needs are a prerequisite for meaningful academic learning (Darling-Hammond et al., 2020). The developmentally appropriate practice framework formulated by the National Association for the Education of Young Children (NAEYC) offers a basis for pedagogical decision-making that is consistent with these findings, as it requires teachers to align instruction with knowledge of child development, the uniqueness of each individual, and the sociocultural context in which children grow up (NAEYC, 2020, 2022).

Although the scope of developmentally appropriate practice explicitly extends to children up to the age of eight, and therefore includes the early grades of primary school, research attention to this level remains limited. The most recent systematic review of the framework focused on the roles and beliefs of preschool teachers, examining fourteen studies published between 2010 and 2023 (Shumetu Taye et al., 2025). Reviews of play-based learning in primary schools do exist, but they concentrate on teachers' pedagogical activities in playful learning rather than on the framework as a whole (Li & Kangas, 2024). Meanwhile, in the United States, kindergarten, which sits within the elementary school system, has shifted towards what Bassok et al. (2016)

called the “new first grade”, characterised by heavier academic content and standardised testing (Brown et al., 2019a). These conditions indicate that implementation in primary education takes place under pressures that differ from those in preschool settings and therefore warrants a dedicated mapping.

In Indonesia, the need for such a mapping has become more pressing with the implementation of the Merdeka Curriculum and the deep learning approach (*pembelajaran mendalam*) (Kementerian Pendidikan Dasar dan Menengah, 2025; Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi, 2024), both of which call for differentiated and student-centred instruction. Risa and Gani (2026), in a conceptual book chapter, note that teachers' understanding of developmentally appropriate practice is often limited to technical aspects, such as the use of play materials or physical activities, and that many teachers regard it as relevant only to early childhood education. They further argue that the framework contains a complete philosophical dimension, namely a view of the nature of the child, of how children acquire knowledge, and of the values that education seeks to realise. Research on the topic in Indonesian primary schools has begun to emerge, for example in the form of descriptions of learning based on the framework (Sari & Silitonga, 2024) and the development of physical education games grounded in it (Hutapea et al., 2021). However, these findings have not yet been synthesised alongside international evidence, making them difficult to use as a basis for policy and teacher professional development.

In response to this gap, the present study conducts an integrative review combined with bibliometric mapping to examine the implementation of developmentally appropriate practice in primary education. Its novelty lies in three aspects: first, an explicit focus on primary education, which has been underrepresented in previous syntheses; second, the use of the three core considerations of the fourth edition, namely commonality, individuality, and context, as the analytical framework; and third, the interpretation of findings through ontological, epistemological, and axiological lenses as articulated in the philosophy of science and the philosophy of primary education (Lontoh, 2024; Risa & Gani, 2026). The study addresses four research questions: (RQ1) What are the characteristics of research on implementing developmentally appropriate practice in primary education? (RQ2) What strategies are used? (RQ3) What outcomes are reported for students' learning and development? (RQ4) What challenges are encountered in implementation? Building on these answers, the Discussion interprets the philosophical implications of the findings for primary education practice.

II. Literature Review

A. *Developmentally Appropriate Practice: Concept and the Fourth-Edition Framework*

NAEYC (2020) defines developmentally appropriate practice as methods that promote each child's optimal development and learning through a strengths-based, play-based approach to joyful and engaged learning. The fourth-edition framework articulates three core considerations that guide teachers' decision-making. Commonality refers to general knowledge about child development and learning; individuality refers to the strengths, interests, and needs that are specific to each child; and context refers to the values, language, culture, family, and community of the child, including teachers' awareness of their own biases (NAEYC, 2022). These considerations are elaborated into nine principles of child development and learning, which state, among other things, that all domains of development are interrelated, that play promotes joyful learning, and that development advances when children are challenged slightly beyond their current mastery (NAEYC, 2020). Accordingly, developmentally appropriate practice is not a collection of techniques but a framework of considerations that requires teachers to be intentional in designing instruction.

The framework has not been without criticism. Kessler and Castner (2024) examined the ideas in the fourth edition through the lens of curriculum theory, related them to the crisis in United States education, and recommended that early childhood teacher education be developed in a more democratic manner. Such critiques are important because they caution against treating developmentally appropriate practice as a universal recipe detached from curricular values and interests. Within the philosophy of primary education, Risa and Gani (2026) articulate the philosophical structure of the framework more comprehensively: ontologically, the child is regarded as a unique, active, and capable individual; epistemologically, knowledge is constructed through experience, reflection, and social interaction; and axiologically, the framework carries the values of humanity, democracy, inclusivity, and sustainability. This formulation is consistent with the definition of ontology as the study of the nature of reality, epistemology as the study of the origins and validity of knowledge, and axiology as the study of the values and benefits of knowledge (Lontoh, 2024).

B. *Developmental Characteristics of Primary School Children and Play as Pedagogy*

Primary school children experience rapid and interconnected development across multiple domains, so instructional practices that neglect one domain risk hindering others (NAEYC, 2020). Developmental science shows that the child's brain is malleable, that complex skills develop through the integration of cognitive,

emotional, and social processes, and that individual variation is a normal condition rather than a deviation (Cantor et al., 2019). Within this framework, play is regarded as a developmentally appropriate strategy because it capitalises on the natural curiosity of school-aged children. Parker et al. (2022) explain that learning through play at school is characterised by experiences that are joyful, meaningful, socially interactive, actively engaging, and iterative. However, Allee-Herndon and Roberts (2021) observe that the share of purposeful, learning-oriented play has in fact declined in the early grades, replaced by didactic, test-driven instruction, even though neuroscientific evidence increasingly points to the importance of play experiences for children's development.

C. Developmentally Appropriate Practice and Primary Education: Prior Evidence and the Research Gap

Evidence on the impact of developmentally appropriate practice is often presented in positive terms, but earlier critical reviews paint a more cautious picture. Van Horn et al. (2005) found no consistent evidence of effects on either cognitive or academic outcomes and noted that mixed findings were frequently reported as positive results. That review is now more than two decades old, did not use a modern systematic protocol, and predates the fourth-edition framework. More recent evidence offers more targeted support: a meta-analysis by Skene et al. (2022) of children aged one to eight found that guided play was more effective than direct instruction in developing early mathematics skills ($g = 0.24$), shape knowledge ($g = 0.63$), and task switching ($g = 0.40$), although no differences were found for several other outcomes. These findings suggest that the key question is no longer whether developmentally appropriate practice is effective in general, but which of its strategies are effective, for whom, and under what conditions.

The need to answer this question at the primary level is reinforced by the fact that existing syntheses have not specifically targeted this level. Shumetu Taye et al. (2025) limited their review to preschool teachers, whereas Li and Kangas (2024) synthesised twenty-one studies on playful learning in primary schools published between 2014 and 2023 and identified four phases of teachers' pedagogical activity, namely planning, orientation, playing, and elaboration, without linking them to the developmentally appropriate practice framework. At the same time, field research shows that novice teachers in public elementary schools face real challenges in understanding and implementing the framework (Brown et al., 2024). Together, these conditions point to a research gap: there is no systematic synthesis that maps the implementation of developmentally appropriate practice in primary education using the three core considerations and interprets it philosophically. This review was designed to address that gap, particularly by bringing in the perspective of non-Western countries, which has so far been underrepresented.

III. Methods

A. Research Design

This study employed an integrative review design combined with bibliometric mapping. An integrative review was chosen because it allows researchers to combine findings from diverse research designs, whether quantitative, qualitative, or conceptual, in order to build new understanding and frameworks on a topic rather than merely estimating effect sizes statistically (Snyder, 2019). This design is consistent with the aim of the study, which is to understand the implementation of developmentally appropriate practice in primary education holistically, including its philosophical dimensions, so that empirical findings can be read alongside the conceptual analyses developing in the literature on curriculum and the philosophy of primary education (Kessler & Castner, 2024; Risa & Gani, 2026). The study was conducted in two complementary stages. The first stage consisted of bibliometric mapping to capture the research landscape at the macro level, while the second stage consisted of a content synthesis of selected studies to answer the research questions in depth. The reporting of both stages was adapted from the transparency principles of PRISMA 2020 so that each step can be traced by readers (Page et al., 2021).

B. Data Sources and Search Strategy

Data for the first stage were drawn from the Scopus database. The search was conducted on 21 September 2026 using the following search string: TITLE-ABS-KEY (("developmentally appropriate practice*" OR "developmentally appropriate instruction*" OR "developmentally appropriate pedagog*") AND ("primary school*" OR "elementary school*" OR "primary grade*" OR "early grade*" OR kindergarten OR "first grade" OR "second grade")), limited to publications from 2016 to the search date (21 September 2026), and yielded 667 records. All records were exported with their titles, abstracts, and keywords for analysis in VOSviewer. Data for the second stage were obtained through targeted searches of Scopus, ERIC, Google Scholar, and the Garuda (Garba Rujukan Digital) portal, a national index of Indonesian scholarly publications, supplemented by forward and backward citation searching of key studies. A targeted search strategy was adopted because the bibliometric map showed that the term developmentally appropriate is widely used in the health sciences,

meaning that most records were not relevant to school-based learning. The Garuda portal was used to capture research from the Indonesian context that is not indexed in international databases, given that research on developmentally appropriate practice is dominated by English-language publications from Western countries (Risa & Gani, 2026).

Study eligibility was determined using the inclusion and exclusion criteria presented in Table 1. The criteria were structured according to a population, concept, and context framework: the population comprised primary school students or teachers, the concept was developmentally appropriate practice or practices explicitly linked to developmental appropriateness, and the context was formal school-based learning. Kindergarten classes that form part of the elementary school system, as in the United States, were included because they are institutionally part of primary education and are explicitly covered by the framework. In addition to empirical studies, systematic reviews, meta-analyses, and conceptual articles that directly addressed the application of developmentally appropriate practice or learning through play in schools were included as supporting sources for the synthesis. Two of these sources, Skene et al. (2022) and Kessler and Castner (2024), also cover children below primary school age; they were retained only as supporting syntheses because they explicitly include the early grades of primary school, and they were not used as evidence on preschool settings. Each study identified in the second stage was assessed for eligibility through its full text against these criteria, and only studies that met all inclusion criteria were included in the synthesis.

Table 1. Inclusion and exclusion criteria

Criterion	Inclusion	Exclusion
Population	Primary school students or teachers, including kindergarten within the elementary school system	Preschool or early childhood settings outside the elementary school system, or secondary education
Concept	Developmentally appropriate practice or practices explicitly linked to developmental appropriateness, including learning through play	Does not address developmentally appropriate practice or developmental appropriateness
Context	Formal school-based learning	Home-based care or non-formal programmes
Publication type	Peer-reviewed journal articles, systematic reviews, meta-analyses, conceptual articles, academic book chapters	Proceedings without full text, opinion pieces, theses or dissertations
Year and language	2016–2026; English or Indonesian	Outside the time frame or in other languages

C. Data Extraction and Quality Appraisal

The data collection instrument was a structured data extraction form that recorded publication details, country, grade level, research design and methods, participants, the strategies implemented, the outcomes measured or reported, and implementation challenges. The form also included columns for mapping each study onto the three core considerations, namely commonality, individuality, and context (NAEYC, 2022), so that the data could be coded directly into the analytical framework. The methodological quality of empirical studies was assessed using the Mixed Methods Appraisal Tool (MMAT) version 2018, which is designed to appraise qualitative, quantitative, and mixed methods studies within a single instrument (Hong et al., 2018). Studies were not excluded on the basis of quality scores alone; instead, the scores were used to weigh the findings during synthesis. To ensure reliability, extraction and quality appraisal were performed twice by the first author at separate points in time (intra-rater checking); discrepancies between the two rounds were resolved before further analysis, and the synthesis was subsequently validated by the second author.

D. Data Analysis

Data analysis was carried out in three complementary stages. The first stage was a descriptive analysis to answer RQ1, covering the distribution of publication years, countries, grade levels, and research designs. The second stage was a bibliometric analysis using VOSviewer to map keyword co-occurrence in the Scopus records, so that thematic clusters and relationships among concepts in the literature could be visualised (van Eck & Waltman, 2010). This map served as a macro-level overview of the research landscape before the in-depth content synthesis was undertaken. The third stage was a thematic synthesis to answer RQ2 to RQ4. Coding was conducted deductively on the basis of the three core considerations and inductively to capture themes emerging from the data, following the procedures of reflexive thematic analysis, which comprise familiarisation

with the data, coding, generating themes, reviewing themes, and defining and naming themes (Braun & Clarke, 2019).

The results of the thematic synthesis were then interpreted through ontological, epistemological, and axiological lenses. The ontological interpretation examined the view of the nature of the child implied by the strategies implemented; the epistemological interpretation examined assumptions about how children acquire knowledge; and the axiological interpretation examined the values and educational aims that are either advanced or neglected in practice (Lontoh, 2024; Risa & Gani, 2026). This step distinguishes the present review from earlier syntheses, which have tended to stop at the level of strategies and outcomes. To ensure credibility, every claim in the synthesis was linked to its source study, contradictory findings were reported openly, and the limitations of the evidence, such as the dominance of particular contexts or designs with small samples, were stated explicitly. In this way, the conclusions do not exceed the strength of the available evidence and remain scientifically accountable to readers and reviewers.

IV. Results and Discussion

A. Research Results

1. Review process and study corpus (RQ1)

The review process is presented in Fig. 1. In the first stage, the Scopus search yielded 667 records, all of which were analysed through bibliometric mapping to capture the research landscape at the macro level, as described in the section on the thematic landscape. In the second stage, targeted and citation searches yielded candidate studies, whose eligibility was then assessed through their full texts against the criteria in Table 1. As a result, fourteen studies met the criteria and were synthesised, comprising nine empirical studies and five review or conceptual studies addressing the application of developmentally appropriate practice or learning through play in schools. It should be emphasised that this synthesis corpus was not obtained through exhaustive screening of the 667 records but through targeted searches guided by the results of the mapping. The composition of the corpus indicates that empirical research explicitly examining developmentally appropriate practice in primary schools remains relatively scarce, so an understanding of its implementation must be built by carefully combining empirical evidence and conceptual analysis.

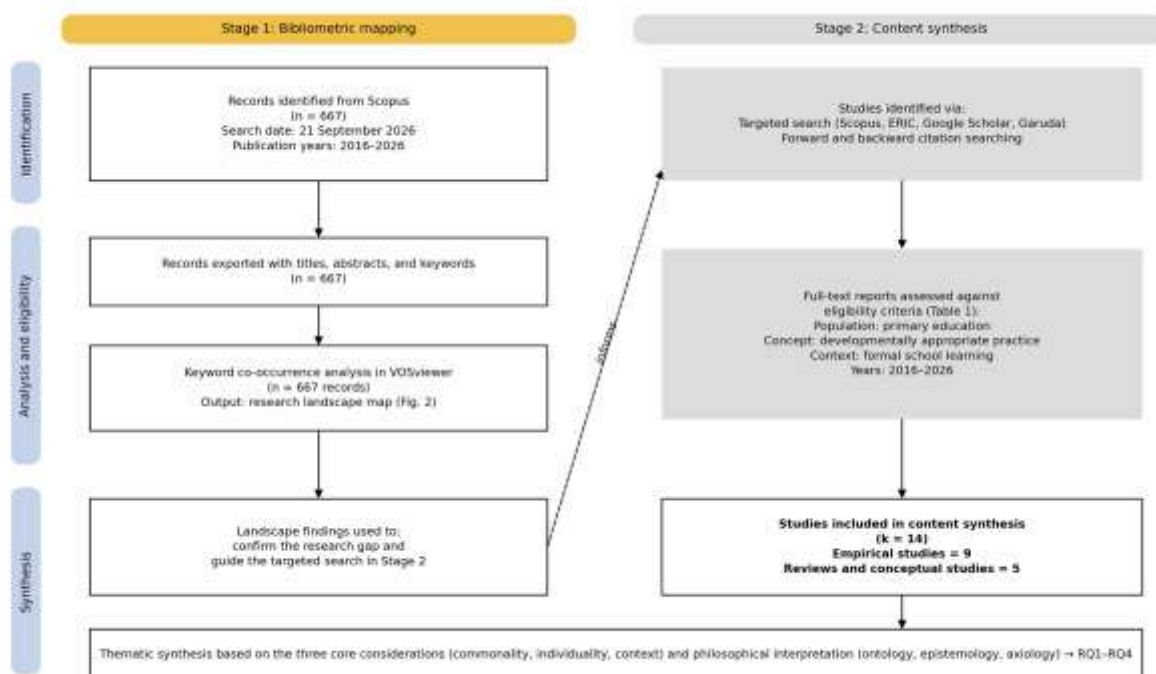


Fig. 1. Two-stage integrative review process

2. Characteristics of the included studies (RQ1)

The characteristics of the fourteen synthesised studies are presented in Table 2. Geographically, research is concentrated in the United States, with nine studies, followed by two studies from Indonesia and three international syntheses. The dominance of the United States derives mainly from a series of studies on the transformation of kindergarten into an increasingly academic grade (Brown et al., 2019a, 2019b, 2020, 2021)

and from research on play-based pedagogy in the early grades (Allee-Herndon & Roberts, 2021; Allee-Herndon et al., 2022). In terms of publication year, the studies were published between 2016 and 2024. In terms of grade level, most studies were conducted in the early grades, from kindergarten to second grade, while the upper grades of primary school were barely addressed. In terms of design, qualitative sensemaking studies and case studies were the most common, followed by observational, quasi-experimental, and descriptive studies. This pattern indicates that knowledge about developmentally appropriate practice in primary schools is still built more on stakeholders' perceptions than on measurements of long-term effects on learning outcomes.

Table 2. Characteristics of the synthesised studies

No	Author (Year)	Country	Level/context	Design	Main focus
1	Alford et al. (2016)	USA	PreK–Grade 2	Observational	Developmentally appropriate practices and student engagement
2	Brown et al. (2019a)	USA	Kindergarten	Video-cued multivocal ethnography	Stakeholders' sensemaking of the changed kindergarten
3	Brown et al. (2019b)	USA	Kindergarten	Qualitative	Families' sensemaking; loss of joy in learning
4	Brown et al. (2020)	USA	Kindergarten	Qualitative	Teachers' sensemaking of the changed kindergarten
5	Brown et al. (2021)	USA	Kindergarten and beyond	Qualitative	Sensemaking of school readiness
6	Hutapea et al. (2021)	Indonesia	Primary (PE)	Development study	Games based on developmentally appropriate practice
7	Allee-Herndon et al. (2022)	USA	Title I kindergarten	Quasi-experimental	Play-based pedagogy and literacy
8	Brown et al. (2024)	USA	Public elementary	Case study	First-year teachers' implementation challenges
9	Sari & Silitonga (2024)	Indonesia	Primary	Descriptive	Overview of learning based on developmentally appropriate practice
10	Allee-Herndon & Roberts (2021)	USA	Early grades	Conceptual	Purposeful play in the early grades
11	Parker et al. (2022)	International	School	Conceptual framework	Framework for learning through play at school
12	Skene et al. (2022)	International	Ages 1–8	Meta-analysis	Guided play versus direct instruction
13	Kessler & Castner (2024)	USA	Early childhood–early grades	Conceptual	Curriculum theory and the fourth edition
14	Li & Kangas (2024)	International	Primary	Systematic review	Teachers' pedagogical activities in playful learning

3. Thematic landscape of the research

Bibliometric mapping of the 667 Scopus records produced a keyword co-occurrence network organised into ten clusters (Fig. 2). The largest and densest cluster, shown in green, is centred on the keyword *developmentally appropriate practice* and is closely linked to *early childhood*, *preschool*, *preschool teachers*, *early years*, *play-based learning*, *learning environment*, *inclusive education*, as well as *computational thinking* and *technology*. The large nodes for *early childhood* and *preschool* confirm that the literature on developmentally appropriate practice remains centred on early childhood education. In contrast, the keyword *elementary education* appears only as a small node in the red cluster, alongside *cognitive development*, *creativity*, *high school*, *China*, and *Kenya*, and is located far from the centre of the green cluster. This peripheral position provides bibliometric evidence of the research gap underpinning this review, namely that the implementation of developmentally appropriate practice in primary education has not yet become a principal focus of research.

although significant findings linked higher ratings of teachers' developmentally appropriate practices with patterns of student engagement. At the curricular level, Kessler and Castner (2024) show that implementing the fourth edition requires teachers to understand curriculum as a value-laden practice connected to democratic education rather than as a mere sequence of content. In the Indonesian context, Sari and Silitonga (2024) describe learning based on developmentally appropriate practice in primary schools, while Risa and Gani (2026) propose an integration model that combines project-based learning, authentic assessment, play materials and social simulation, and differentiated instruction.

5. Outcomes for students' learning and development (RQ3)

The reported outcomes of implementing developmentally appropriate practice span both academic and non-academic domains. In the academic domain, the meta-analysis by Skene et al. (2022) provides the strongest evidence that guided play outperforms direct instruction in developing early mathematics skills and shape knowledge, while the study by Allee-Herndon et al. (2022) points to the potential benefits of play-based pedagogy for the language and literacy of children from low-income families. In the cognitive and self-regulatory domain, Skene et al. (2022) also found a positive effect of guided play on task switching, a component of executive function. In the motivational domain, Alford et al. (2016) linked more developmentally appropriate practices with student engagement, while Parker et al. (2022) identify active engagement and joyful experience as core features of learning through play. Overall, the evidence indicates that the benefits are most evident when play is designed purposefully and linked to specific learning goals.

Nevertheless, the evidence on learning outcomes must be read critically. Skene et al. (2022) note that no meaningful differences were found between guided play and other approaches for several other outcomes, and that studies varied considerably in how they defined and implemented guided play. This finding is consistent with the caution by Van Horn et al. (2005) that evidence on developmentally appropriate practice is often presented more positively than the actual results warrant. In addition, most studies in this review used qualitative designs or small samples that were not designed to measure long-term effects. Non-academic outcomes emerged mainly in qualitative research, for example families' concerns about the loss of joy in learning in an increasingly academic kindergarten (Brown et al., 2019b). Accordingly, the impact of developmentally appropriate practice in primary schools is best understood as promising but not yet conclusive, particularly for the upper grades and for contexts outside the United States.

6. Implementation challenges (RQ4)

The most consistent implementation challenge in the literature is academic and accountability pressure. The series of studies by Brown and colleagues shows that kindergarten in the United States has become a grade with heavier academic content and more standardised testing, and that this change has been interpreted in diverse ways by stakeholders at the local, state, and national levels (Brown et al., 2019a). The change has also been felt by teachers and families, who question the loss of children's enjoyment of learning (Brown et al., 2019b, 2020), and it has shaped how stakeholders make sense of school readiness in and beyond kindergarten (Brown et al., 2021). Allee-Herndon and Roberts (2021) reinforce these findings by documenting the shrinking of purposeful play in the early grades as test-oriented instruction increases. This pressure places teachers in a dilemma between meeting the demands for academic achievement and providing developmentally appropriate practice.

The second challenge concerns teacher capacity. Brown et al. (2024) found that first-year teachers in public elementary schools struggled to make sense of and implement developmentally appropriate practice, making support from teacher educators and principals essential for bridging conceptions and practice. Li and Kangas (2024) show that playful learning requires complex pedagogical skills, from planning to elaboration, and cannot be carried out spontaneously. In Indonesia, this challenge is reflected in teachers' predominantly technical understanding of the framework, cognitively oriented assessment systems, and the scarcity of dedicated training (Risa & Gani, 2026). The third challenge is conceptual, namely the risk of applying developmentally appropriate practice as a universal norm without considering local curricular and cultural values (Kessler & Castner, 2024). The mapping of these challenges onto the three core considerations is summarised in Table 3, which shows that the consideration of context is the most vulnerable point in implementation.

Table 3. Mapping of findings onto the three core considerations of developmentally appropriate practice

Core consideration	Strategies identified	Reported outcomes	Main challenges
Commonality	Guided play; concrete experiences	Early mathematics, literacy, executive function	Varied definitions and implementation of play
Individuality	Attention to at-risk and diverse learners	Student engagement	Differentiation rarely designed explicitly

Core consideration	Strategies identified	Reported outcomes	Main challenges
Context	Value-sensitive curriculum; stakeholder partnership	Joy in learning (qualitative)	Academic pressure, standardised testing, teacher capacity

B. Discussion

The findings of this review indicate that the implementation of developmentally appropriate practice in primary education sits within a tension between two logics: a developmental logic that places the child at the centre, and an accountability logic that treats test performance as the principal measure. Read through the three core considerations, most of the strategies identified rest on the consideration of commonality, that is, the general knowledge that children in the early school years learn effectively through play and concrete experience (NAEYC, 2022; Skene et al., 2022). The consideration of individuality appears mainly in studies involving children from low-income families or diverse ethnic backgrounds (Alford et al., 2016; Allee-Herndon et al., 2022), but it is rarely translated into explicit differentiation strategies. The consideration of context, by contrast, appears most often as a source of constraint rather than as a pedagogical resource. This pattern suggests that the framework is still practised only partially in primary schools, so the full potential of the fourth edition, with its emphasis on balancing the three considerations, has yet to be realised. In this article, philosophical praxis refers to practice in which pedagogical decisions are guided by explicit and reflective commitments about the nature of the child, how children come to know, and the values of education, rather than by techniques alone.

Ontologically, guided play and child-centred instruction reflect the view that the child is an active subject with potential rather than an empty vessel to be filled (Risa & Gani, 2026). This view is consistent with evidence that human development is malleable and shaped by relationships and experience (Cantor et al., 2019). However, the academic pressure documented in the studies by Brown et al. (2019a, 2020) shows that, in practice, children are often treated as recipients of uniform standards. Epistemologically, the evidence on guided play supports the view that knowledge is constructed through interaction among the child, materials, and adults who provide purposeful support (Li & Kangas, 2024; Skene et al., 2022). When space for play shrinks and instruction is dominated by transmission, as Allee-Herndon and Roberts (2021) observe, what occurs is not merely a change of method but a shift in epistemological assumptions about how children come to know.

Axiologically, the findings reveal a shift in values that deserves attention. Families' concerns about the loss of joy in their children's learning (Brown et al., 2019b) suggest that the values of well-being and meaningful learning may be displaced by the values of efficiency and measurable achievement. Yet the synthesis of the science of learning and development affirms that supportive relationships, a sense of safety, and personalised instruction are conditions for academic success rather than obstacles to it (Darling-Hammond et al., 2020). The critique by Kessler and Castner (2024) regarding the need for more democratic teacher education can be read in this light as an effort to restore the dimension of values to curricular decision-making. For Indonesian primary education, this axiological dimension can be bridged through the values of Pancasila and the graduate profile of the Merdeka Curriculum, as proposed by Risa and Gani (2026), so that developmentally appropriate practice is not adopted as a foreign framework but adapted as a praxis rooted in local values.

The practical implications of this review can be formulated at three levels. At the teacher level, professional development should go beyond play techniques to build the capacity to design guided play linked to learning goals, to observe children's development, and to differentiate instruction (Brown et al., 2024; Li & Kangas, 2024). At the school level, principals need to create space for developmentally appropriate practice amid demands for academic achievement. At the policy level, assessment systems should accommodate authentic assessment so that teachers are not pushed back towards test-oriented instruction (Risa & Gani, 2026). This review has several limitations, including a synthesis corpus obtained through targeted searches that cannot guarantee comprehensive coverage, the limited number of empirical studies, the dominance of the United States context, the emphasis on the early grades, and the restriction to publications in English and Indonesian. In addition, the bibliometric stage relied on Scopus alone, and the keyword map depends on a search string that included "kindergarten" and therefore inflated early-childhood terms. Data extraction and quality appraisal were also carried out by a single reviewer, with intra-rater rather than inter-rater checking. The findings should therefore be generalised with caution, particularly to the upper grades of primary school and to education systems with different cultures and structures.

V. Conclusion

This integrative review concludes that the implementation of developmentally appropriate practice in primary education is an important but unevenly developed area of research. Studies remain concentrated in the United States and in the early grades, with designs dominated by qualitative studies based on stakeholders'

perceptions. The most widely applied strategies are guided play, child-centred instruction, and developmentally sensitive curriculum planning, with promising but inconclusive outcomes for learning engagement, language and literacy, early mathematics skills, and task switching as a component of executive function. The main challenges arise from academic and accountability pressure, limited teacher capacity, and a predominantly technical understanding of the framework. Through a philosophical lens, this review shows that developmentally appropriate practice in primary schools is best positioned as a philosophical praxis that aligns views on the nature of the child, on how children come to know, and on the values of education, rather than as a mere collection of instructional techniques.

Building on these conclusions, future research should test the implementation of developmentally appropriate practice empirically in primary schools in non-Western countries, including Indonesia, using longitudinal or experimental designs that measure academic and non-academic outcomes simultaneously. Research should also extend to the upper grades of primary school, which remain almost unexplored, and should develop and validate observation instruments aligned with national curricula. In addition, studies of teacher professional development models that combine philosophical understanding with the practical skills of implementing the framework constitute an urgent agenda, given that teacher capacity is a decisive factor in successful implementation. For policymakers, these findings underline the need to align assessment policy with developmentally appropriate learning goals so that teachers are not caught between conflicting demands. In this way, developmentally appropriate practice can inform primary education practices that attend to the development of the whole child.

Conflict of Interest

The authors declare that there is no conflict of interest related to this study.

Author Contributions

A.A.A. conceptualised and designed the study, developed the review protocol and search strategy, conducted the bibliometric mapping, literature search, study selection, data extraction, quality appraisal, and thematic synthesis, and drafted the manuscript. H.U. supervised the study, contributed to the philosophical framework of primary education used to interpret the findings, validated the synthesis, and reviewed and edited the manuscript. All authors have read and approved the final version of this manuscript.

Funding

This research received no external funding.

Acknowledgment

The authors would like to thank the Doctoral Program in Primary Education, Universitas Negeri Jakarta, for its academic and institutional support during the preparation of this review. The authors also thank the colleagues in the Philosophy of Primary Education course for their constructive feedback on the earlier draft of this manuscript.

References

- Alford, B. L., Rollins, K. B., Padrón, Y. N., & Waxman, H. C. (2016). Using systematic classroom observation to explore student engagement as a function of teachers' developmentally appropriate instructional practices (DAIP) in ethnically diverse pre-kindergarten through second-grade classrooms. *Early Childhood Education Journal*, 44(6), 623–635. <https://doi.org/10.1007/s10643-015-0748-8>
- Allee-Herndon, K. A., & Roberts, S. K. (2021). The power of purposeful play in primary grades: Adjusting pedagogy for children's needs and academic gains. *Journal of Education*, 201(1), 54–63. <https://doi.org/10.1177/0022057420903272>
- Allee-Herndon, K. A., Roberts, S. K., Hu, B., Clark, M. H., & Stewart, M. L. (2022). Let's talk play! Exploring the possible benefits of play-based pedagogy on language and literacy learning in two Title I kindergarten classrooms. *Early Childhood Education Journal*, 50(1), 119–132. <https://doi.org/10.1007/s10643-020-01141-6>
- Bassok, D., Latham, S., & Rorem, A. (2016). Is kindergarten the new first grade? *AERA Open*, 2. <https://doi.org/10.1177/2332858415616358>
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, 11(4), 589–597. <https://doi.org/10.1080/2159676X.2019.1628806>

- Brown, C. P., Barry, D. P., & Ku, D. H. (2021). How education stakeholders made sense of school readiness in and beyond kindergarten. *Journal of Research in Childhood Education*, 35(1), 122–142. <https://doi.org/10.1080/02568543.2020.1717688>
- Brown, C. P., Englehardt, J., Barry, D. P., & Ku, D. H. (2019a). Examining how stakeholders at the local, state, and national levels made sense of the changed kindergarten. *American Educational Research Journal*, 56(3), 822–867. <https://doi.org/10.3102/0002831218804152>
- Brown, C. P., Englehardt, J., Ku, D. H., & Barry, D. P. (2019b). "Where's the joy in the classroom?" Families' sensemaking of the changed kindergarten. *The Elementary School Journal*, 120(2), 319–346. <https://doi.org/10.1086/705964>
- Brown, C. P., Ku, D. H., & Barry, D. P. (2020). "Kindergarten isn't fun anymore. Isn't that so sad?": Examining how kindergarten teachers in the US made sense of the changed kindergarten. *Teaching and Teacher Education*, 90, 103029. <https://doi.org/10.1016/j.tate.2020.103029>
- Brown, C. P., Ku, D. H., Puckett, K., & Barry, D. P. (2024). First-year teachers' challenges with implementing developmentally appropriate practices in their public school classrooms. *Journal of Research in Childhood Education*, 38(1), 104–122. <https://doi.org/10.1080/02568543.2023.2190787>
- Cantor, P., Osher, D., Berg, J., Steyer, L., & Rose, T. (2019). Malleability, plasticity, and individuality: How children learn and develop in context. *Applied Developmental Science*, 23(4), 307–337. <https://doi.org/10.1080/10888691.2017.1398649>
- Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2), 97–140. <https://doi.org/10.1080/10888691.2018.1537791>
- Hong, Q. N., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M.-P., Griffiths, F., Nicolau, B., O'Cathain, A., Rousseau, M.-C., Vedel, I., & Pluye, P. (2018). The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers. *Education for Information*, 34(4), 285–291. <https://doi.org/10.3233/EFI-180221>
- Hutapea, R. P., Simatupang, N., & Kasih, I. (2021). Game development is developmentally appropriate practice (developmentally appropriate) practice based education for elementary school children. *Journal Physical Education, Health and Recreation*, 5(2), 179–185. <https://doi.org/10.24114/pjkr.v5i2.27573>
- Kementerian Pendidikan Dasar dan Menengah. (2025). *Peraturan Menteri Pendidikan Dasar dan Menengah Nomor 13 Tahun 2025 tentang Perubahan atas Peraturan Menteri Pendidikan, Kebudayaan, Riset, dan Teknologi Nomor 12 Tahun 2024 tentang Kurikulum pada Pendidikan Anak Usia Dini, Jenjang Pendidikan Dasar, dan Jenjang Pendidikan Menengah* [Regulation of the Minister of Primary and Secondary Education No. 13 of 2025 amending Regulation No. 12 of 2024 on the Curriculum for Early Childhood Education, Primary Education, and Secondary Education].
- Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi. (2024). *Peraturan Menteri Pendidikan, Kebudayaan, Riset, dan Teknologi Nomor 12 Tahun 2024 tentang Kurikulum pada Pendidikan Anak Usia Dini, Jenjang Pendidikan Dasar, dan Jenjang Pendidikan Menengah* [Regulation of the Minister of Education, Culture, Research, and Technology No. 12 of 2024 on the Curriculum for Early Childhood Education, Primary Education, and Secondary Education].
- Kessler, S., & Castner, D. (2024). Curriculum theory and developmentally appropriate practice. *International Journal of Early Years Education*, 32(3), 565–579. <https://doi.org/10.1080/09669760.2024.2370845>
- Li, X., & Kangas, M. (2024). A systematic literature review of playful learning in primary education: Teachers' pedagogical activities. *Education* 3–13, 54(7), 1549–1564. <https://doi.org/10.1080/03004279.2024.2416954>
- Lontoh, F. O. L. (2024). *Filsafat ilmu* [Philosophy of science]. Filosofi Indonesia Press.
- National Association for the Education of Young Children. (2020). *Developmentally appropriate practice: A position statement of the National Association for the Education of Young Children*. NAEYC. <https://www.naeyc.org/resources/position-statements/dap/contents>
- National Association for the Education of Young Children. (2022). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8* (4th ed.). NAEYC.
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA

2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, 372, n71. <https://doi.org/10.1136/bmj.n71>

- Parker, R., Thomsen, B. S., & Berry, A. (2022). Learning through play at school – A framework for policy and practice. *Frontiers in Education*, 7, 751801. <https://doi.org/10.3389/feduc.2022.751801>
- Risa, H., & Gani, R. A. (2026). Prinsip developmentally appropriate practice (DAP) dalam pendidikan dasar [The principles of developmentally appropriate practice (DAP) in primary education]. In Herlina (Ed.), *Filsafat pendidikan dasar* [Philosophy of primary education] (pp. 67–80). Yayasan Laksita Indonesia.
- Sari, G., & Silitonga, B. N. (2024). Gambaran pembelajaran berbasis developmentally appropriate practice (DAP) di sekolah dasar [An overview of developmentally appropriate practice-based learning in primary schools]. *Ideguru: Jurnal Karya Ilmiah Guru*, 9(1), 408–415. <https://doi.org/10.51169/ideguru.v9i1.849>
- Shumetu Taye, M., Yadasa Kana, F., & Regassa Jekil, T. (2025). Preschool teachers' role and beliefs about developmentally appropriate practice: A systematic literature review. *Center for Educational Policy Studies Journal*, 15(3), 145–166. <https://doi.org/10.26529/cepsj.1693>
- Skene, K., O'Farrelly, C. M., Byrne, E. M., Kirby, N., Stevens, E. C., & Ramchandani, P. G. (2022). Can guidance during play enhance children's learning and development in educational contexts? A systematic review and meta-analysis. *Child Development*, 93(4), 1162–1180. <https://doi.org/10.1111/cdev.13730>
- 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>
- van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523–538. <https://doi.org/10.1007/s11192-009-0146-3>
- Van Horn, M. L., Karlin, E. O., Ramey, S. L., Aldridge, J., & Snyder, S. W. (2005). Effects of developmentally appropriate practices on children's development: A review of research and discussion of methodological and analytic issues. *The Elementary School Journal*, 105(4), 325–351. <https://doi.org/10.1086/429946>



Copyright © 2026 by the authors. This is an open access article distributed under the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.