

# A DEVELOPMENTAL PSYCHOLOGY-INFORMED LEARNING MODEL FOR IMPROVING STUDENT ENGAGEMENT IN ISLAMIC PRIMARY EDUCATION: EVIDENCE FROM MUHAMMADIYAH SCHOOL IN PROBOLINGGO

Dody Tisna Amijaya<sup>1</sup>, Firmansyah<sup>2</sup>

<sup>1,2</sup> Institut Ahmad Dahlan Probolinggo, Indonesia

Email : dodywafasby@gmail.com<sup>1</sup>, firmannya02@gmail.com<sup>2</sup>

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## Abstract :

*Student engagement in Islamic primary education requires learning approaches that are responsive to children's cognitive, emotional, social, and moral development. This study aims to develop and examine a Developmentally Responsive Learning Model for enhancing student engagement in Islamic primary schools by integrating developmental psychology principles with Islamic educational practices. Employing a qualitative case study design, this research was conducted at MI Muhammadiyah Kota Probolinggo, East Java, Indonesia. Data were collected through classroom observations, semi-structured interviews, and document analysis involving ten educational practitioners, including school leaders and teachers. Data were analysed using thematic analysis to identify patterns related to developmental adaptation, teacher-student interaction, learning engagement, and pedagogical transformation. The findings reveal that the proposed model consists of four interconnected dimensions: developmental-based instructional adaptation, meaningful teacher-student relationships, multidimensional student engagement, and the transformation of teachers' pedagogical roles. The model demonstrates that students' engagement increases when learning activities are aligned with their developmental characteristics and supported by emotionally responsive classroom environments. Furthermore, the integration of Islamic educational values strengthens students' moral, social, and spiritual engagement in learning processes. This study contributes theoretically by extending developmental psychology-based pedagogy within Islamic education and provides practical implications for designing inclusive, meaningful, and culturally responsive learning environments in Islamic primary schools.*

**Keywords :** *Developmental Psychology; Learning Model; Student Engagement; Islamic Primary Education; Muhammadiyah School*

## Abstrak :

Keterlibatan belajar siswa dalam pendidikan dasar Islam membutuhkan pendekatan pembelajaran yang responsif terhadap perkembangan kognitif, emosional, sosial, dan moral peserta didik. Penelitian ini bertujuan untuk mengembangkan dan mengkaji Model Pembelajaran Responsif Perkembangan (Developmentally Responsive Learning Model) dalam meningkatkan keterlibatan belajar siswa pada sekolah dasar Islam melalui integrasi prinsip psikologi perkembangan dengan praktik pendidikan Islam. Penelitian ini menggunakan pendekatan kualitatif dengan desain studi kasus yang dilaksanakan di MI Muhammadiyah Kota Probolinggo, Jawa Timur, Indonesia. Data penelitian dikumpulkan melalui observasi pembelajaran, wawancara semi-terstruktur, dan analisis dokumen dengan melibatkan sepuluh praktisi pendidikan yang terdiri atas pimpinan sekolah dan guru. Data dianalisis menggunakan analisis tematik untuk mengidentifikasi pola terkait adaptasi pembelajaran berbasis perkembangan, interaksi guru-siswa, keterlibatan belajar, dan transformasi praktik pedagogis. Hasil penelitian menunjukkan bahwa model yang dikembangkan terdiri atas empat dimensi yang saling berkaitan, yaitu adaptasi pembelajaran berbasis perkembangan, hubungan

guru-siswa yang bermakna, keterlibatan belajar multidimensional, dan transformasi peran pedagogis guru. Model ini menunjukkan bahwa keterlibatan belajar siswa meningkat ketika aktivitas pembelajaran disesuaikan dengan karakteristik perkembangan peserta didik serta didukung oleh lingkungan kelas yang responsif secara emosional. Selain itu, integrasi nilai-nilai pendidikan Islam memperkuat keterlibatan moral, sosial, dan spiritual siswa dalam proses pembelajaran. Penelitian ini memberikan kontribusi teoretis terhadap pengembangan pedagogi berbasis psikologi perkembangan dalam pendidikan Islam serta implikasi praktis bagi pengembangan lingkungan belajar yang inklusif, bermakna, dan sesuai dengan konteks budaya sekolah Islam.

**Kata Kunci:** Psikologi Perkembangan; Model Pembelajaran; Keterlibatan Belajar Siswa; Pendidikan Dasar Islam; Sekolah Muhammadiyah

## INTRODUCTION

The increasing complexity of contemporary education has encouraged a global shift from content-oriented teaching approaches toward learning models that recognize students as developing individuals with diverse cognitive, social, emotional, and cultural characteristics. Within this paradigm, the concept of a Developmentally Responsive Learning Model has gained attention as an approach that aligns instructional practices with learners' developmental stages and individual needs. Developmentally responsive learning emphasizes that effective teaching should be designed based on students' readiness, developmental characteristics, and learning experiences rather than relying solely on standardized instructional procedures. This perspective is closely connected with the principles of developmentally appropriate practice (DAP), which advocate learning environments that are responsive to children's developmental trajectories and promote meaningful engagement in learning activities (Sari & Silitonga, 2024). In primary education contexts, developmentally responsive approaches are increasingly considered essential because children's learning processes are strongly influenced by their psychological development, interpersonal relationships, and classroom experiences. Furthermore, in Islamic primary schools, such as madrasah ibtidaiyah, developmentally responsive learning has additional significance because educational practices are expected to integrate academic achievement, moral development, and religious values within students' developmental contexts.

Previous studies have demonstrated that developmentally responsive approaches contribute positively to students' learning experiences, motivation, and engagement. Research on Developmentally Appropriate Practice in elementary education indicates that teachers who consider students' developmental characteristics are better able to design meaningful classroom

activities and provide learning experiences that correspond with children's cognitive and socio-emotional conditions (Sari & Silitonga, 2024). Similarly, Ardi et al. (2025) developed a learning model based on Developmentally Appropriate Practice and found that developmentally aligned instructional activities enhanced elementary students' learning motivation by creating more enjoyable and age-appropriate learning experiences. In addition, international research on student engagement has highlighted that engagement is a multidimensional construct involving behavioral, emotional, and cognitive participation, which is strongly influenced by instructional quality, teacher-student relationships, and supportive classroom environments. For example, longitudinal research has shown that positive teacher-student interactions and adaptive classroom practices significantly contribute to classroom engagement among elementary students (Li et al., 2024). These findings suggest that learning models integrating developmental perspectives have substantial potential to improve students' engagement and overall educational experiences.

Despite growing scholarly interest in developmentally responsive education, several critical research gaps remain. First, existing studies have predominantly examined Developmentally Appropriate Practice as a general pedagogical approach, while limited attention has been given to the systematic development of a comprehensive Developmentally Responsive Learning Model that integrates developmental psychology principles into instructional design. Second, previous research has frequently focused on learning motivation, academic achievement, or classroom behavior, whereas student engagement as a multidimensional outcome remains insufficiently explored, particularly in Islamic primary education settings. Third, research conducted in diverse educational contexts has rarely addressed how developmental responsiveness can be integrated with Islamic educational values, where learning is not only concerned with cognitive growth but also with spiritual, moral, and social development. Consequently, there is a need for empirical studies that develop and validate a developmentally responsive learning framework specifically designed for Islamic primary schools. Addressing this gap is important because madrasah ibtidaiyah represents a distinctive educational environment where developmental psychology, pedagogical innovation, and Islamic educational philosophy intersect.

This study proposes a novel Developmentally Responsive Learning Model for Enhancing Student Engagement in Islamic Primary Schools by

integrating developmental psychology principles with Islamic primary education practices. Unlike previous studies that mainly apply developmental approaches as instructional strategies, this research operationalizes developmentally responsive learning into a structured model consisting of three interconnected components: (1) systematic identification of students' developmental characteristics, including cognitive, emotional, social, and spiritual dimensions; (2) adaptive instructional design that modifies learning activities according to students' developmental needs; and (3) engagement-oriented assessment strategies that evaluate students' behavioral, emotional, and cognitive involvement in learning. This model contributes theoretically by extending discussions on developmental psychology-based pedagogy within Islamic education and contributes practically by providing teachers with an applicable framework for designing inclusive, meaningful, and engaging learning experiences. The proposed model is expected to bridge the gap between developmental theory and classroom practice in Islamic primary education.

Based on these considerations, this study aims to develop and examine the implementation of a Developmentally Responsive Learning Model for Enhancing Student Engagement in Islamic Primary Schools. Specifically, this research seeks to answer the following questions: (1) What are the essential characteristics and components of a Developmentally Responsive Learning Model suitable for students in Islamic primary schools? (2) How is the Developmentally Responsive Learning Model implemented to enhance students' learning engagement? (3) To what extent does the developed model improve students' behavioral, emotional, and cognitive engagement in learning? By addressing these questions, this study intends to provide empirical evidence and theoretical contributions for advancing developmentally informed pedagogical practices in Islamic primary education.

## **RESEARCH METHOD**

This study employed a qualitative approach with a qualitative case study design to explore comprehensively the construction and implementation of a Developmental Psychology-Based Learning Model for Enhancing Student Learning Engagement at Muhammadiyah Islamic Primary School in Probolinggo City. A qualitative approach was selected because this study aimed to understand learning experiences, teacher strategies, classroom interactions, and students' engagement processes within their natural educational environment. Such phenomena require an interpretative approach to reveal the meanings,

practices, and contextual factors underlying educational processes rather than relying solely on quantitative measurements (Aspers & Corte, 2019; Creswell & Poth, 2018). The case study design enabled the researcher to investigate educational practices in depth by considering the social, cultural, and institutional characteristics that influence the implementation of developmental psychology-based learning (Rashid et al., 2019; Yin, 2018). The research was conducted over a three-month period, from March to May 2025, including research preparation, instrument development, field data collection, data analysis, and manuscript completion prior to publication in June 2025.

The research was conducted at MI Muhammadiyah Kota Probolinggo, East Java, Indonesia. The research site was selected through purposive sampling because the school represents an Islamic primary education institution that integrates child developmental principles, Islamic educational values, and learner-centred pedagogical approaches. The selection of this institution was based on its commitment to developing learning environments that consider students' cognitive, emotional, social, and moral development. Purposive selection is appropriate in qualitative research because research settings are selected based on their capacity to provide rich and meaningful information related to the research objectives (Campbell et al., 2020; Palinkas et al., 2015). In addition, Muhammadiyah educational institutions provide a relevant context for examining the integration of psychological development perspectives and Islamic educational practices due to their emphasis on educational innovation, character formation, and continuous improvement.

The participants in this study consisted of educational practitioners directly involved in the implementation of learning activities at MI Muhammadiyah Kota Probolinggo. Participants were selected using purposive sampling, in which informants were chosen based on their knowledge, experience, and direct involvement in implementing developmental psychology principles in classroom practices (Campbell et al., 2020). The study involved 10 participants, consisting of the principal, the vice principal responsible for academic affairs, and classroom teachers representing different grade levels. The number of participants was determined based on the principle of data saturation, whereby data collection was concluded when recurring patterns had emerged and no significant new information was identified from additional participants (Guest et al., 2020).

The focus of this study was the developmental psychology-based learning model, particularly its contribution to improving students' learning engagement through attention to cognitive, emotional, social, and motivational development. Data collection was conducted from March to April 2025 using three primary techniques: classroom observation, semi-structured interviews, and document analysis. The use of multiple data collection methods enables researchers to develop a comprehensive understanding of educational phenomena by examining different sources of evidence and perspectives (Creswell & Poth, 2018; Yin, 2018). Semi-structured interviews were conducted because they provide flexibility for exploring participants' experiences while maintaining alignment with the research objectives (Kallio et al., 2016). Observation was employed to capture authentic classroom practices and interactions within the natural learning environment.

The research instruments consisted of observation guidelines, semi-structured interview protocols, and document analysis frameworks developed based on theoretical indicators of developmental psychology, student learning engagement, and Islamic primary education. The instruments underwent expert validation involving specialists in educational psychology and Islamic education to ensure their relevance, clarity, and alignment with the research objectives (Polit & Beck, 2021). The research procedure consisted of several stages: preliminary study and research preparation (March 2025), instrument development and validation (March 2025), field data collection (March–April 2025), data transcription and coding (April 2025), thematic interpretation, and manuscript preparation (May 2025).

Data analysis was conducted using thematic analysis to identify patterns, categories, and themes related to the implementation of developmental psychology-based learning and its relationship with student engagement. The analysis followed several stages, including data familiarisation, initial coding, theme development, theme review, theme definition, and final interpretation (Braun & Clarke, 2021). Interview transcripts, observation notes, and documentary data were organised and analysed using NVivo 14 software to support systematic coding, data management, and thematic mapping (Woods et al., 2022). The trustworthiness of the findings was maintained through source and methodological triangulation by comparing information obtained from interviews, classroom observations, and document analysis. This process

strengthened the credibility, dependability, and confirmability of the findings, which are essential criteria for ensuring methodological rigour in qualitative research (Nowell et al., 2017).

## **FINDINGS AND DISCUSSION**

### **Findings**

The thematic analysis of classroom observations and semi-structured interviews revealed that the Developmentally Responsive Learning Model for Enhancing Student Engagement in Islamic Primary Schools implemented at MI Muhammadiyah Kota Probolinggo was characterized by four interconnected themes: (1) developmental-based instructional adaptation, (2) meaningful teacher-student interaction, (3) multidimensional student engagement, and (4) transformation of teacher pedagogical practices. These themes demonstrate that learning practices designed based on students' developmental characteristics create more supportive, meaningful, and engaging learning experiences within the context of Islamic primary education.

The first theme identified was developmental-based instructional adaptation. The findings indicated that teachers adjusted instructional strategies by considering students' cognitive readiness, emotional conditions, social characteristics, and individual learning needs. Classroom observations showed that teachers implemented various adaptive strategies, including contextual learning activities, collaborative tasks, visual learning resources, interactive discussions, and differentiated learning support. Teachers explained that understanding students' developmental characteristics enabled them to provide appropriate levels of challenge and assistance, allowing students to participate in learning activities according to their abilities. Rather than applying uniform instructional approaches, teachers developed flexible learning experiences that accommodated variations in students' readiness and learning preferences. These findings indicate that developmentally responsive learning functions as an adaptive pedagogical approach that connects psychological understanding of learners with instructional decision-making.

The second theme concerned meaningful teacher-student interaction as a foundation for engagement development. The findings showed that teachers played a central role in creating emotionally supportive classroom environments where students felt valued, respected, and encouraged to participate. Interview data revealed that students were more confident in expressing ideas, asking

questions, and collaborating with peers when teachers provided positive feedback and created opportunities for active involvement. Classroom observations confirmed that supportive communication patterns between teachers and students contributed to increased classroom participation and stronger emotional connections with learning activities. These findings suggest that teacher responsiveness is not merely a classroom management strategy but represents an essential mechanism for developing students' psychological attachment to learning. Within educational psychology perspectives, positive teacher-student relationships provide an important social foundation that encourages students' motivation, confidence, and willingness to engage in academic activities.

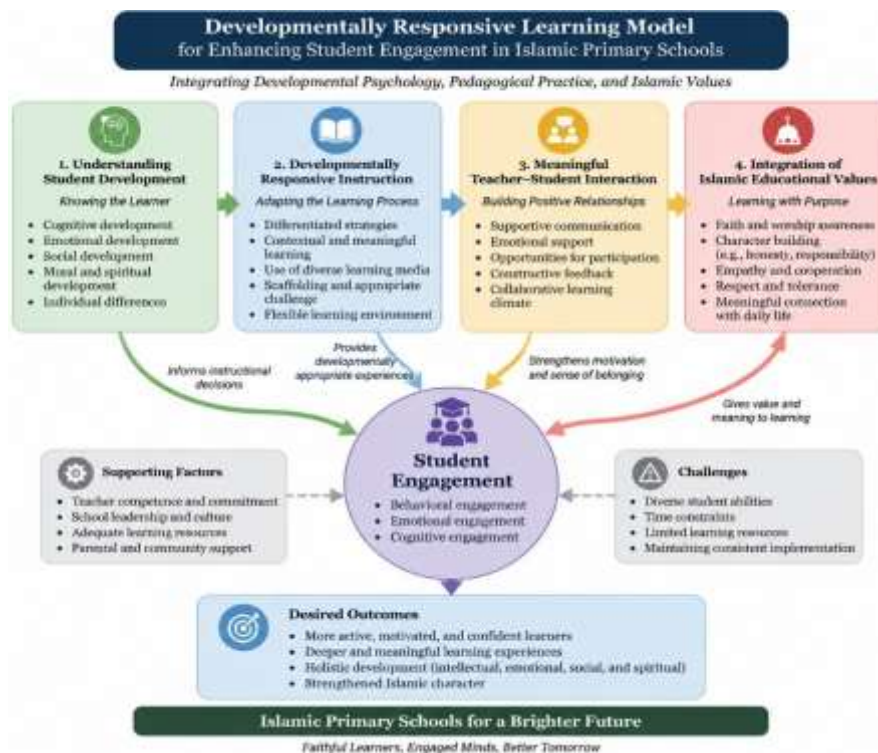
The third theme revealed the emergence of multidimensional student engagement, encompassing behavioral, emotional, and cognitive dimensions. The observations demonstrated that students showed behavioral engagement through active participation in discussions, group activities, and classroom tasks. Emotional engagement was reflected through students' enthusiasm, enjoyment, and positive attitudes toward learning activities, while cognitive engagement appeared through students' questioning, problem-solving, and attempts to connect learning materials with real-life experiences. The findings indicate that the Developmentally Responsive Learning Model influenced engagement beyond classroom participation by encouraging students to develop deeper involvement and ownership of their learning processes. Students became more active learners because instructional activities were perceived as meaningful, relevant, and appropriate to their developmental conditions.

A further finding revealed that the implementation of the Developmentally Responsive Learning Model contributed to a transformation of teachers' pedagogical roles from knowledge transmitters into learning facilitators who actively interpreted students' developmental needs. Interview findings indicated that teachers gradually shifted their instructional orientation from delivering standardized materials toward designing adaptive learning experiences based on students' psychological conditions, learning readiness, and social interactions. Teachers reported that students who previously demonstrated limited participation became more involved when learning activities provided opportunities for exploration, collaboration, reflection, and personal expression. Classroom observations supported this finding by showing that teachers frequently provided scaffolding, adjusted questioning strategies,

and connected learning materials with students' everyday experiences. This finding demonstrates that developmental responsiveness represents not only a teaching technique but also a pedagogical mindset that positions students as active participants in constructing knowledge.

The final theme concerned the integration of developmental responsiveness with Islamic educational values. The findings showed that the model implemented at MI Muhammadiyah Kota Probolinggo integrated academic development with students' moral, social, and spiritual growth. Teachers incorporated Islamic values such as responsibility, cooperation, empathy, discipline, and reflection into classroom activities, creating a holistic learning environment. Students reported that learning became more meaningful when academic content was connected with Islamic values and daily experiences because they perceived learning as relevant to their personal development. This finding highlights that student engagement in Islamic primary schools is constructed not only through cognitive involvement but also through emotional attachment, value formation, and a sense of belonging within the learning community.

Overall, the findings demonstrate that the Developmentally Responsive Learning Model function as an integrated pedagogical framework that connects developmental psychology principles with Islamic primary education practices. The model enhances student engagement by aligning instructional strategies, teacher responsiveness, classroom interactions, and value-based learning experiences with students' developmental needs. Thus, the study reveals that developmentally responsive learning provides a contextual framework for strengthening meaningful engagement among students in Islamic primary schools.



**Figure 1.** Developmentally Responsive Learning Model Framework for Enhancing Student Engagement in Islamic Primary Schools.

## Discussion

The findings presented in Figure 1 demonstrate that the Developmentally Responsive Learning Model for Enhancing Student Engagement in Islamic Primary Schools operates as an integrated pedagogical framework that connects developmental psychology, adaptive instructional practices, teacher–student relationships, and Islamic educational values. Rather than viewing student engagement as merely a consequence of instructional techniques, this study suggests that engagement emerges through the alignment between students’ developmental characteristics and the learning environment provided by teachers. This interpretation is consistent with contemporary educational psychology perspectives that conceptualize engagement as a dynamic process shaped by interactions among learners, teachers, and contextual factors rather than as an individual student attribute alone (Skinner et al., 2022). Thus, the model extends previous engagement research by emphasizing developmental responsiveness as an underlying mechanism that explains why certain instructional practices are more effective for primary school learners.

The first contribution of this study relates to the role of developmental-based instructional adaptation as the foundation of meaningful learning experiences. Previous studies have shown that differentiated and adaptive

instruction can improve students' motivation and participation because it accommodates variations in readiness, ability, and learning preferences (Smale-Jacobse et al., 2019). However, many existing studies have primarily examined differentiated instruction from the perspective of academic achievement, while the present study highlights its psychological dimension by positioning developmental understanding as the basis for instructional decision-making. This finding supports developmental psychology theories that children require learning experiences consistent with their cognitive, emotional, and social development. At the same time, the findings challenge conventional instructional models that assume uniform teaching approaches can effectively address diverse learners in primary education contexts.

The findings also reinforce the importance of teacher-student interaction as a psychological mechanism underlying student engagement. The model indicates that responsive teacher behavior creates emotional security, which subsequently encourages students' willingness to participate, communicate, and invest cognitive effort in learning. This finding corresponds with recent research demonstrating that positive teacher-student relationships significantly predict students' classroom engagement and academic adjustment (Roorda et al., 2021). However, unlike previous studies that often treat teacher support as a general motivational factor, this study argues that teacher responsiveness should be understood as a developmental practice in which teachers continuously interpret and respond to students' psychological needs. Theoretically, this expands the understanding of engagement by linking relational pedagogy with developmental adaptation.

Another important interpretation concerns the transformation of teachers' pedagogical roles from knowledge transmitters into developmental facilitators. The findings suggest that effective implementation of the model requires teachers to possess not only pedagogical competence but also psychological sensitivity toward learners' developmental conditions. This perspective is supported by research emphasizing that teacher professional competence involves the ability to make adaptive instructional decisions based on students' characteristics and classroom contexts (Darling-Hammond et al., 2020). Nevertheless, this finding also highlights a practical challenge: developmentally responsive learning requires substantial teacher capacity, reflective practice, and institutional support. Without adequate professional development, developmental principles may remain theoretical concepts rather than becoming

consistent classroom practices.

A distinctive contribution of this research is the integration of Islamic educational values into a developmentally responsive learning framework. Previous research on student engagement has predominantly emerged from secular educational settings, focusing on psychological and pedagogical factors while giving limited attention to religious and cultural dimensions of learning. The present study expands this perspective by demonstrating that engagement in Islamic primary schools is also constructed through value-based experiences, including responsibility, empathy, cooperation, and moral reflection. This finding aligns with culturally responsive education perspectives, which argue that meaningful learning occurs when educational practices recognize learners' cultural identities and value systems (Ladson-Billings, 2021). Therefore, the model contributes theoretically by proposing that developmental responsiveness should not be culturally neutral but should be adapted to the philosophical foundations of specific educational contexts.

From a practical perspective, the findings imply that Islamic primary schools should develop teacher training programs that integrate developmental psychology, adaptive pedagogy, and Islamic educational philosophy. Schools should encourage teachers to conduct systematic observations of students' developmental characteristics before designing instructional activities. Furthermore, educational policymakers can utilize this model as a framework for improving classroom quality by emphasizing learner-centered approaches, supportive teacher-student relationships, and holistic student development. Overall, Figure 1 illustrates that the Developmentally Responsive Learning Model provides a comprehensive framework for strengthening student engagement by integrating psychological, pedagogical, and cultural dimensions of learning. The study therefore contributes to the broader discourse on educational psychology by demonstrating that student engagement can be enhanced when learning environments are intentionally designed to correspond with children's developmental needs and sociocultural contexts.

## **CONCLUSION**

This study concludes that the Developmentally Responsive Learning Model for Enhancing Student Engagement in Islamic Primary Schools provides a contextual pedagogical framework that integrates developmental psychology principles, adaptive instructional practices, teacher-student relationships, and Islamic educational values. The main contribution of this research lies in

demonstrating that student engagement in Islamic primary education is not solely influenced by teaching strategies but is constructed through the alignment between students' developmental characteristics and meaningful learning environments. The proposed model extends existing engagement literature by positioning developmental responsiveness as a fundamental mechanism that connects psychological development with classroom practice.

Theoretically, this study contributes to educational psychology by expanding the understanding of student engagement from an individual motivational construct into a relational and contextual process involving developmental, pedagogical, and cultural dimensions. Practically, the findings provide implications for Islamic primary schools by emphasizing the importance of teacher competence in recognizing students' developmental needs, designing adaptive learning experiences, and integrating value-based education into classroom practices.

However, this study has several limitations. The research was conducted in a single Islamic primary school context with a qualitative design, which limits the generalizability of the findings across different educational settings. Future research should examine the effectiveness of this model through longitudinal or mixed-method approaches involving broader samples and diverse Islamic educational institutions. Further studies may also investigate how developmental responsiveness interacts with digital learning environments, teacher professional development, and different sociocultural contexts to strengthen student engagement in primary education.

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