



Contextualizing Differentiated Instruction in Islamic Education: An Information Processing Approach in Indonesian Secondary Schools

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ABSTRACT

The reality of implementing differentiated learning within the Merdeka Curriculum is increasingly evident nowadays. This requires a contextual-adaptive response from all elements of the subject area, including Islamic Religious Education. This study aims to explore a contextualized differentiated instruction model for Islamic Religious Education within the Merdeka Curriculum in three Indonesian secondary schools. The study used an exploratory, sequential, mixed-methods design. In the first stage, qualitative data were collected through interviews, observations, and document analysis. This was done to identify actual practices of differentiated instruction and to construct a prototype model. In the second stage, quantitative data were collected from 96 respondents, consisting of teachers and students. A closed-ended questionnaire was used to describe their perceptions of the implementation of differentiated instruction. The instrument represented four dimensions: content differentiation, process differentiation, product differentiation, and inclusive learning environment. Content validity was established through expert judgment. Reliability testing yielded a Cronbach's A of 0.642, which indicates limited but usable internal consistency for an exploratory study. Interpretation should therefore be cautious. The findings show that differentiated instruction in the three schools was implemented through systematic planning, varied instructional practices, and continuous evaluation. The qualitative synthesis identified four core components of the proposed model: initial assessment, flexible planning, varied implementation, and continuous evaluation. Quantitative findings further indicate that respondents generally perceived the implementation of differentiated instruction positively across the four dimensions. This research contributes a contextual model of differentiated instruction and highlights the need for further research with stronger instruments and broader samples.

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■ INTRODUCTION

Differentiated instruction is a strategy that aligns the learning process with students' potential, needs, and interests, in line with the concept of "teaching at the right level" (Hidayat et al., 2024; Kristiani et al., 2021). This strategy, popularized by Carol Tomlinson (2021), encompasses the flexibility of content (Maisyaroh et al., 2024), diversity of methods (Taş & Minaz, 2024), and the development of life skills (Razali et al., 2024). Within the context of the *Merdeka* Curriculum, differentiated instruction is an essential tool for accommodating the diversity of Indonesian students, reflecting the nation's demographic and cultural richness (Kemendikbud, 2022). However, its effectiveness largely depends on

teachers' ability to continuously understand and support students' learning needs (Razali et al., 2024; Winarto et al., 2025).

Several studies indicate that differentiated instruction effectively improves the quality of education (Copur-Gencturk & Doleck, 2021) through adaptive approaches to student diversity (Maisyaroh et al., 2024), including fostering the attainment of the *Pelajar Pancasila* profile (Hasanah et al., 2022) through creativity and teacher quality enhancement (Hasanah et al., 2023; Irmidayanti & Fadhilah, 2023). In practice, the potential of differentiated instruction has been applied at various levels of education (Letzel-alt & Pozas, 2023), ranging from elementary schools (Rijal et al., 2025) and secondary schools (Suprayogi

et al., 2017) to higher education (Ni'mah, 2024). Other research reveals that the quality of differentiated instruction is determined not only by mastery of teaching strategies but also by teachers' skills in conducting diagnostic assessments, empathy, and reflective capacity (Razali et al., 2024; Taş & Minaz, 2024). In the context of Islamic education, these challenges are even more complex, as teachers must integrate religious values into adaptive learning without reducing its substantive content. Gea et al. (2022) affirm that differentiation instruction grounded in Islamic values can strengthen students' affective and spiritual aspects in context. Therefore, learning in the *Merdeka* Curriculum era needs to be managed through a multidimensional approach that combines pedagogy, spirituality, and technological support.

Although differentiated instruction has been widely discussed in relation to general subjects, teacher readiness, implementation practices, and educational quality (Marlina et al., 2022; Nketsia et al., 2024; Sofiana et al., 2024; Suyadi et al., 2025; Wang et al., 2025), studies that specifically address differentiated instruction in Islamic Religious Education, particularly at the secondary school level and in relation to model formulation, remain relatively limited in the literature reviewed for this study. Existing discussions of often emphasize values internalization and religious character formation (Shaker, 2024). However, fewer studies explain how researchers can systematically organize differentiated content, process, and product within a instructional model. These numerous studies indicate a contextual and conceptual gap that warrants further investigation (limited based on the reviewed literature).

Accordingly, this study selected three public and private secondary schools in East Java Province -one in Malang City (SMPM), one in Jember City (SMPJ), and one in Probolinggo City (SMPP)- all of which have been designated as *Sekolah Penggerak* (Driving Schools) and have consistently implemented the *Merdeka* Curriculum. These three sites were purposively chosen to represent diverse typologies: an urban setting (Malang), a semi-urban and agrarian setting (Jember), and a coastal socio-economic setting (Probolinggo). This variation ensures that the research findings capture a broader spectrum of contextual implementation while remaining feasible in terms of access and research resources. Although the three schools are located within one province, East Java itself exhibits rich socio-cultural diversity, making this multi-site exploratory study representative and

sufficiently robust to identify an effective differentiated learning model.

In this context, this study aims to explore and formulate a contextually differentiated instruction model for based on practices from three secondary schools and to describe teachers' and students' perceptions of its implementation. Accordingly, this study addresses the question: how is a contextually differentiated learning model implemented at the secondary school level?.

The novelty of this study lies not merely in applying differentiated instruction to Islamic Religious Education, but in offering a contextually specified differentiated model within the *Merdeka* Curriculum. The proposed model is distinctive because it reinterprets generic differentiated instruction through the moral-spiritual aims of . In this model, the initial assessment is used not only to identify students' readiness, interests, and learning preferences, but also to map their preparedness to engage meaningfully with religious content. Flexible planning is directed not only at varying instruction, but also at ensuring that differentiated content, process, and product remain aligned with Islamic ethical values and character formation. Likewise, the five instructional stages are contextualized through -specific emphases, namely the use of moral-religious issues in exploration, the integration of Islamic sources in information gathering, reflective meaning-making in information processing, dialogic clarification in verification, and value-based application in generalization. Thus, the contribution of this study lies in contextualizing differentiated instruction for rather than merely reproducing a generic pedagogical sequence.

Specifically, this study contributes by: (1) formulating a contextual model of differentiated instruction grounded in multi-site field data; (2) clarifying the relationship between differentiated instruction and Joyce and Weil's information processing model in the context of religious learning; and (3) distinguishing between the macro-components of the model and the operational syntax used during classroom implementation. In this sense, the study's contribution is both practical and conceptual (Joyce, Weil, & Calhoun, 2014)

Differentiated instruction is an approach that adapts the learning process to the needs, interests, and abilities of individual students. Within the framework of the *Merdeka* Curriculum, this approach aims to ensure that every student has optimal learning experiences that align with their unique characteristics while also fostering holistic potential development (Amalia et al., 2024).

Differentiation generally includes three main aspects: (1) content differentiation, namely adjusting material based on students' readiness and learning profiles; (2) process differentiation, namely the use of varied learning strategies to accommodate diverse learning styles; and (3) product differentiation, namely providing opportunities for students to demonstrate understanding through various tasks such as essays, presentations, or projects (Achmad et al., 2024; Kurnila et al., 2025; Setambah et al., 2025).

In practice, differentiated instruction has been proven to foster an inclusive and adaptive learning climate, consistent with the spirit of the *Merdeka* Curriculum, which emphasizes personalization and relevance. However, most previous studies have focused on general subjects, while their implementation in Islamic Religious Education has been relatively underexplored.

Despite the growing body of research on differentiated instruction, much of the literature has focused on general subjects, teacher readiness, and broad implementation practices. Far fewer studies have examined how differentiated instruction can be formulated as a contextual instructional model for Islamic Religious Education, particularly within the *Merdeka* Curriculum. This gap is important because it is not limited to cognitive achievement, but also involves moral-spiritual formation, which requires a more specific pedagogical explanation. For this reason, the present study draws on Joyce and Weil's information-processing model as a theoretical lens to explain how differentiated content, process, and product can operate within reflective religious learning.

Joyce, Weil, & Calhoun (2003a) define a learning model as a conceptual framework that provides teachers with guidance in designing, implementing, and evaluating instruction. They classify learning models into four broad groups: information-processing, personal, social-interaction, and behavioral systems. Each model has five core components: syntax, principles of reaction, social system, support system, and instructional and nurturant effects (Joyce, Weil, & Calhoun, 2014). Among these, the information processing model emphasizes exploration, problem-solving, and reflection. This model is highly relevant for promoting adaptive and innovative learning, as it positions students as active subjects in constructing understanding through meaningful learning experiences (Joyce, Weil, & Calhoun, 2003b).

The information processing model aligns with the principles of differentiation in the *Merdeka* Curriculum, as both emphasize the

development of critical thinking, creativity, and the ability to connect concepts with real-life contexts (Eggen & Kauchak, 2013; Gusev et al., 2024; Mangaroska et al., 2022; Prosekov et al., 2022; Rudykhina, 2024). Through this approach, students are encouraged to actively and reflectively explore their learning experiences. This sequence is particularly relevant to because religious learning is not limited to social interaction or behavioral habituation; it also involves reflective cognitive engagement with moral and spiritual content. In differentiated instruction, students are encouraged not only to participate in a variety of activities but also to interpret religious concepts, compare meanings, articulate arguments, and connect lessons to real-life situations. Several studies also reveal that differentiated instruction contributes to improving students' analytical ability and cognitive quality (London, 2022; Samsudi et al., 2024; Sukmawati et al., 2023). Previous research has examined differentiated learning models in general (Ayuningtyas et al., 2023; Gayeta & Ramos, 2019; Masykur et al., 2024), yet studies that specifically investigate their application in remain limited. The information processing model was selected because it provides a more specific explanatory framework for understanding how students receive stimuli, gather information, process meaning, verify understanding, and draw generalizations from learning experiences. For this reason, the information-processing model offers a more precise conceptual lens than personal, social, or behavioral models for explaining the cognitive-reflective dimension of differentiated learning.

In this study, differentiated instruction is not positioned as a parallel concept to the information processing model, but as an adaptive pedagogical mechanism operating within each of its phases. Content differentiation functions most strongly in the exploration and information-gathering stages, where teachers vary stimuli, examples, and source materials according to students' readiness and learning profiles. Process differentiation becomes more visible in the information-gathering and information-processing stages, where students can access, analyze, and organize information through different pathways, paces, and collaborative structures. Product differentiation is most evident in the verification and generalization stages, where students demonstrate understanding and formulate conclusions through multiple forms, such as oral presentations, written reflections, visual representations, or project-based outputs. Thus,

the information processing model provides the cognitive sequence of learning, while differentiation provides the adaptive strategy that makes each phase more accessible and meaningful for diverse learners.

Based on the above elaboration, the conceptual framework of this study integrates theory, curriculum context, and the learning needs of Islamic Religious Education . The epistemological foundation employed is Joyce and Weil's theory, which emphasizes the Information Processing Model. This theoretical perspective is then applied in the domain of , which is positioned as a subject with a distinctive moral–spiritual dimension aimed at shaping students' character, faith, and religious values. In this context, information processing does not merely operate within the cognitive domain. However, it is also interconnected with the affective and psychomotor domains, as reflected in students' religious attitudes and daily practices. Differentiation of content, process, and product is conceived as a manifestation of instructional syntax that provides space for exploration, reflection, and generalization. Within the framework of , differentiation functions not only as a pedagogical strategy but also as a means of internalizing moral and spiritual values of a transcendental nature.

This overall design cannot be separated from the context of the *Merdeka* Curriculum, which emphasizes the principles of inclusion, adaptivity, and contextuality. By integrating information-processing theory, the fundamental values of , differentiated learning strategies, and the *Merdeka* Curriculum framework, this study aims to develop an effective model of differentiated learning that is contextual, adaptive, and capable of fostering the holistic achievement of educational objectives. The framework illustrates the relationship among four main elements: the *Merdeka* Curriculum as the educational context, as a subject with

moral-spiritual characteristics, differentiated instruction as the pedagogical approach, and the information processing model as the theoretical lens. These elements collectively inform the development of a contextual differentiated instruction model. The researcher visualizes this conceptual framework in the following figure:

■ **METHOD**

Participants

The research sites were three public and private secondary schools (SMPM, SMPJ, and SMPP) that have been designated as *Sekolah Penggerak* (Driving School) and have consistently implemented the *Merdeka* Curriculum. These schools were purposively chosen to capture diverse typologies: urban (Malang), semi-urban and agrarian (Jember), and coastal socio-economic (Probolinggo).

In the qualitative stage, the study involved 27 informants: three principals (one from each school, with initials “W”, “H”, and “J”), three vice principals for curriculum (initials “M”, “K”, and “S”), six teachers (initials “N”, “I”, “P”, “R”, “T”, and “L”), and fifteen grade VIII students (five from each school, with initials “A1”-“A15”). However, before the researchers conducted observations and interviews, the informants received an explanation of the research problem, objectives, benefits, and potential risks.

In the quantitative stage, 96 respondents participated (six teachers and ninety grade VIII students). The respondents were selected purposively because they were directly involved in or exposed to differentiated instruction at the three sites. The sample size was not intended for hypothesis testing or broad generalization, but rather to provide an initial descriptive overview of respondents' perceptions in a small-scale exploratory study. Therefore, the quantitative findings should be interpreted within this limited scope.

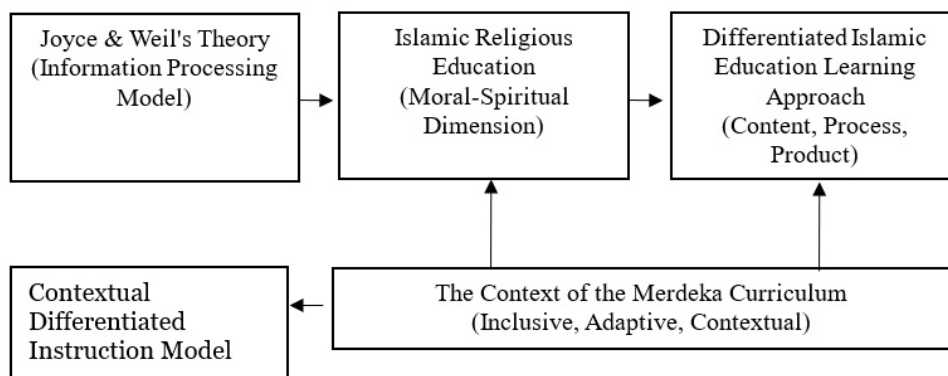


Figure 1. Theoretical Framework

Research Design and Procedures

This study is a multi-site case study using an exploratory sequential mixed-methods design. The first stage used a descriptive qualitative approach to explore the implementation of differentiated instruction at the three research sites and to construct a prototype model grounded in field findings. The second stage used a descriptive quantitative approach to examine teachers' and students' perceptions of the model's implementation. Thus, the quantitative phase did not test causal effectiveness, but rather provided complementary descriptive evidence regarding respondents' views of differentiated instruction practices.

Data integration was conducted at the interpretation stage of the exploratory sequential design. *First*, qualitative findings were used to identify the core components of differentiated instruction and to construct a prototype model. *Second*, the quantitative phase was designed based on these qualitative findings to capture respondents' perceptions of the implementation of the identified dimensions. *Finally*, both datasets were integrated narratively, with the qualitative findings serving as the primary basis for model formulation. At the same time, the quantitative results provided descriptive support regarding respondents' perceptions of those practices.

Instruments

The qualitative instruments included interview guides, observation sheets, and document analysis protocols. The quantitative instrument consisted of 12 items and was developed from qualitative findings and adapted from core differentiated instruction principles discussed in the literature, particularly those related to content, process, product, and inclusive learning support. The content differentiation dimension measured the

extent to which learning materials were adjusted to students' readiness and learning needs. The process differentiation dimension measured the extent to which varied strategies, activities, and pathways were used during learning. The product differentiation dimension measured the extent to which students were given options in demonstrating their understanding. The inclusive learning environment dimension measured teacher support, responsiveness, and the extent to which the classroom atmosphere accommodated student diversity.

Example items included: "The teacher provides more than one way to learn the material," "Students are allowed to choose different formats to complete assignments," and "The teacher creates a classroom environment that supports different learning needs."

Content validity was established through expert judgment by an Islamic education lecturer, a practicing teacher, and an expert in educational instruments. Instrument reliability was tested using Cronbach's A based on responses from 96 participants. The general interpretation consists of three distinct criteria to determine reliability. First, a Cronbach's A greater than 0.70 indicates that the instrument is fully reliable. Second, a value between 0.60 and 0.70 is considered acceptably reliable, making it suitable for small-scale exploratory studies. Finally, if the Cronbach's A falls below 0.60, the items are deemed unreliable and require revision. The initial instrument comprised 12 items distributed equally across the four dimensions. However, item-level analysis revealed that four items, Q2, Q4, Q6, and Q8, exhibited weak corrected item-total correlations, indicating limited contribution to the overall construct being measured. These items were subsequently removed, and the remaining items were revised to maintain

Table 1. Research Operational Indicators

No	Dimension	Operational Indicators
1.	Content Differentiation	Learning materials are adjusted to student readiness; materials vary in format; students access materials appropriate to their needs.
2.	Process Differentiation	Teachers use varied methods; students are allowed different ways of learning; activities reflect learning preferences and participation levels.
3.	Product Differentiation	Students are given alternative task formats; assessment output is flexible; students can demonstrate understanding in more than one form.
4.	Inclusive Learning Differentiation	Teachers provide support for diverse learners; classroom interactions are respectful and accommodating; students feel included in learning activities.

conceptual coverage across all four dimensions.

This discrepancy between the qualitative grounding of the items and their statistical performance warrants reflection. Several factors may account for this gap. *First*, operationalizing qualitative findings into closed-ended questionnaire items inevitably entails some interpretive reduction. Concepts that emerged richly in interviews and observations, such as nuanced perceptions of teacher support or the subtleties of process differentiation, may have lost contextual specificity when translated into brief, standardized statements. *Second*, the relatively small and homogeneous sample ($N = 96$) may have limited response variability, which in turn could have suppressed item-total correlations for items that, in a larger or more diverse sample, might have performed adequately. *Third*, some items may have overlapped semantically with other items within the same dimension, leading to redundancy rather than poor conceptual grounding. In particular, items Q2 and Q4 addressed aspects of content and process differentiation closely related to adjacent items (Q1 and Q3, respectively), while Q6 and Q8 captured inclusive learning behaviors that respondents may not have perceived as distinct from the neighboring items.

It is important to note that this item removal does not invalidate the qualitative findings from which the items were derived. Rather, it highlights the methodological challenge of converting rich, context-dependent qualitative data into psychometrically robust survey items—a well-documented limitation in exploratory mixed-methods research (Creswell & Plano Clark, 2018). The revised instrument, consisting of the retained and adjusted items, preserved the four-dimensional structure while achieving acceptable internal consistency for an exploratory study (Cronbach's $A = 0.642$). Future research should undertake a more rigorous instrument development process, including pilot testing with a larger sample, cognitive interviewing, and confirmatory factor analysis, to strengthen the questionnaire's psychometric properties.

Data Analysis

Qualitative data were collected through participant observation in differentiated learning activities, in-depth interviews with informants, and document analysis (lesson plans, syllabi, and teachers' journals). Quantitative data were collected using an online questionnaire distributed via Google Forms, which was developed based on the qualitative findings from the first stage.

Qualitative data were analyzed using the interactive model of Miles, Huberman, and Saldaña, which includes data condensation, data display, and conclusion drawing/verification. In the data condensation stage, interview transcripts, observation notes, and documents were selected, coded, and organized by theme related to planning, implementation, evaluation, and model formulation. In the data display stage, the coded findings were arranged in matrices and thematic summaries to facilitate comparison across the three schools. In the conclusion-drawing and verification stage, recurring patterns and cross-site similarities were interpreted to identify the model's core components. To enhance trustworthiness, the study applied source triangulation, technique triangulation, and researcher discussion during the interpretation process.

Quantitative data were analyzed descriptively to portray teachers' and students' perceptions of the implementation of differentiated instruction across the four measured dimensions. Integration of qualitative and quantitative findings was conducted during the interpretation stage to verify and refine the overall research results.

■ RESULT AND DISCUSSION

Development of a Contextual Model of Differentiated Instruction

Planning Stage

The planning stage began with an online survey distributed to all students to screen their learning styles and identify individual learning preferences. Based on this mapping, teachers conducted diagnostic tests to obtain additional data on students' learning readiness. This information served as the basis for preparing lesson modules and differentiated instructional strategies. Through this approach, teachers designed learning experiences that not only responded to student diversity but also strengthened adaptive practices aligned with the spirit of the *Merdeka Curriculum*. As emphasized by one grade VIII teacher ("T"):

"The differentiated instruction we implement at this school is based on the reality that diversity is something inherent in our students. Each of them deserves to be respected and appreciated for their potential, and therefore, through the spirit of producing P5-character students within the Merdeka Curriculum, we adapt these principles into both classroom and extracurricular learning."

Document analysis also confirmed the existence of diagnostic tests, which became the

basis for preparing lesson modules by teachers. The diagnostic tests and lesson modules developed by the researchers provide concrete evidence of systematic planning that supports the model's implementation.

Implementation Stage

During the implementation stage, teachers applied differentiated instruction through the selection of varied methods and strategies. Information from teachers ("N", "P", "R", "T", "I", and "L") indicated that the strategies included content, process, and product differentiation. *First*, content differentiation was implemented through PowerPoint, electronic reading materials, and YouTube instructional videos to accommodate different learning styles. *Second*, process differentiation was carried out through group discussions, simulations, and case studies that allowed students flexibility in choosing their learning approaches. *Third*, product differentiation was implemented by offering students a choice of final tasks, such as producing video presentations, writing essays, or creating thematic posters.

This was supported by testimonies from "A3," a grade VIII student, who noted that learning involved engaging activities such as discussions, Q&A sessions, group assignments, searching for learning sources on YouTube, and

using educational games. Observation data were consistent with this student's statement, confirming that the variety of strategies had a positive impact on motivation and engagement.

The implementation of differentiated instruction at the three participating schools -SMPM (Malang City), SMPJ (Jember City), and SMPP (Probolinggo City)- has been carried out since 2021, following their designation as institutions adopting the *Merdeka* Curriculum. As public and private *Sekolah Penggerak* (Driving Schools), these schools are committed to accommodating the diverse potentials and needs of their students through differentiated instruction. Based on interviews with the principals ("W", "H", and "J"), it was revealed that teachers actively facilitated student learning needs through a variety of customized strategies and methods. This indicates the existence of an adaptive school culture that is open to pedagogical innovation. Observations also revealed that the process of implementing differentiated Islamic Religious Education at the three sites includes systematic stages of planning, implementation, and evaluation, particularly in grade VIII.

Evaluation Stage

During the evaluation stage, interviews with teachers indicated that evaluations were conducted regularly through formative and summative assessments. In addition, the school principal's supervision contributed to ensuring the proper implementation of differentiated instruction in the classroom. Nevertheless, the researcher observed that teachers faced several challenges in implementing differentiated instruction: limited school resources, significant disparities in student capabilities, and the need for additional training for teachers in designing optimal differentiation strategies. This indicates a gap between the ideal concept of differentiation and its practical reality, which requires further institutional support.

Synthesis of Qualitative Findings

Based on interviews, observations, and document analysis across the three schools, the researcher concluded that the implementation of differentiated instruction has been well established and consistent. Teachers prepared lesson modules based on the *Merdeka* Curriculum that incorporated differentiation strategies. In the planning stage, teachers used diagnostic assessments to identify students' needs, interests, and learning styles. The results of these assessments became the foundation for designing varied instructional activities suited to student characteristics. The implementation of differentiated instruction demonstrated a

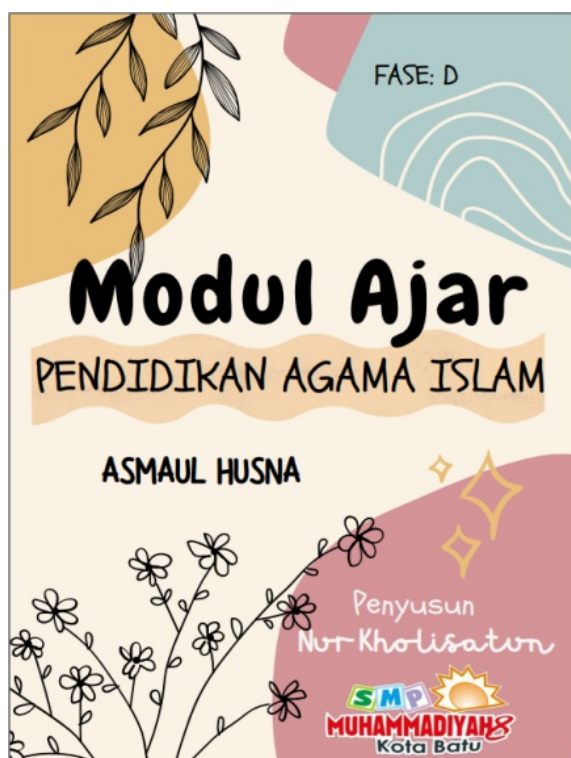


Figure 2. Lesson Modules of at the Participating Schools



Figure 3. Differentiated Instruction Process at the Participating Schools

progressive, systematic pattern supported by institutional commitment across the three sites. From the synthesis of these qualitative data, the researcher identified four key components of differentiated instruction: initial assessment, flexible planning, varied implementation, and continuous evaluation. These four components represent the macro-structure of the proposed model. Within the “varied implementation” component, classroom instruction is operationalized through five instructional syntax stages: exploration and stimulation, information gathering, information processing, verification, and generalization.

Formulation of the Differentiated Instruction Model

a. Four Core Component of the Model

Based on the synthesis of interviews, observations, and document analysis across the three participating schools, the researcher identified four core components of the differentiated Islamic Religious Education instruction model: initial assessment, flexible planning, varied implementation, and continuous evaluation. These components represent the macro-structure of the proposed model.

The first component, initial assessment, refers to teachers' efforts to identify students' readiness, interests, and learning preferences before instruction begins. The second component, flexible planning, involves preparing lesson modules, strategies, and learning activities based on the results of the initial assessment. The third component, varied implementation, refers to the application of differentiated instruction through variations in

content, process, and product during classroom learning. The fourth component, continuous evaluation, refers to the use of formative and summative assessment, teacher reflection, and school supervision to monitor learning and improve subsequent instruction.

Taken together, these four components show that the proposed model is not merely a collection of teaching techniques but a structured instructional framework that accommodates student diversity systematically and contextually within the *Merdeka Curriculum*.

The proposed model should be understood at two interconnected levels. At the macro level, it consists of four core components: initial assessment, flexible planning, varied implementation, and continuous evaluation. At the operational level, the varied implementation component is enacted through five instructional syntax stages, namely exploration and stimulation, information gathering, information processing, verification, and generalization.

b. Five Instructional Syntax Stages within Varied Implementation

Within the varied implementation component, the researcher identified five instructional syntax stages in differentiated learning at SMPM, SMPJ, and SMPP: exploration, stimulation and problem-solving; information gathering; information processing; verification; and generalization. These stages represent the operational sequence of classroom implementation and reflect the logic of the information processing model.

In the first stage, teachers presented contextual issues to stimulate students' attention and engagement. In the second stage, students gathered relevant information from printed and digital learning sources. In the third stage, students processed the information by analyzing, comparing, and organizing it into a meaningful understanding. In the fourth stage, students verified their understanding through presentations and discussions. In the fifth stage, students formulated broader conclusions and connected the learning material to real-life contexts and Islamic values. Thus, while the four core components represent the overall structure of the model, the five stages of syntax explain how differentiated instruction is enacted pedagogically in classroom practice.

Synthesis of Quantitative Findings

Respondents' Perceptions of the Model Implementation

The quantitative stage involved 96 respondents (6 teachers and 90 students across

Table 2. Dimensions of the Questionnaire Instrument

No	Dimension	Indicator
1.	Content Differentiation	Students receive materials according to their interests and abilities
2.	Process Differentiation	Students are provided with varied methods and activities that match their learning styles
3.	Product Differentiation	Students are given choices of different formats for tasks/assessments
4.	Inclusive Learning Differentiation	Teachers provide support and create a conducive, accommodating environment

the three schools) to describe perceptions of the implementation of the proposed differentiated instruction model. The questionnaire instrument consisted of 12 items representing four dimensions: content differentiation, process differentiation, product differentiation, and inclusive learning environment.

Before analyzing the data, the researchers assessed the instrument's reliability using Cronbach's A. In this study, the A value should be interpreted cautiously because the researchers used the instrument in a small-scale exploratory context. While values above 0.70 are generally preferred for stronger internal consistency, values in the range of 0.60–0.70

may still be reported in exploratory studies as preliminary evidence, provided that their limitations are explicitly acknowledged and the findings are interpreted with caution. The initial item analysis indicated that items Q2, Q4, Q6, and Q8 had weak item-total correlations, thereby reducing the instrument's overall internal consistency. For this reason, these items were not retained in the final variance table. Table 3, therefore, presents only the retained and revised items used in the final instrument structure. This revision process was undertaken following expert review and item screening to maintain conceptual coverage across the four dimensions. After this stage, Cronbach's A reliability test results are presented in Table 4.

In this research, the instrument produced an overall Cronbach's A of 0.642 based on 96 responses. This value indicates limited internal consistency and does not meet conventional reliability standards. Nevertheless, given the exploratory nature of the study and the descriptive role of the quantitative phase, the researchers retained the instrument for preliminary interpretation. Therefore, the quantitative findings should be interpreted with caution and understood as supportive descriptive evidence rather than as a basis for strong inferential claims.

Comparative Analysis of Perceptions

Comparative statistical tests were conducted to examine potential differences in perceptions between respondent groups. Two analyses were performed: an independent samples t-test comparing teachers and students, and a one-way ANOVA comparing the three participating schools. Moreover, an independent samples t-test was conducted to examine whether teachers ($n = 6$) and students ($n = 90$) differed significantly in their perceptions of differentiated instruction. Prior to the analysis, the assumptions of normality (Shapiro-Wilk test) and homogeneity of

Table 3. Item Variance ($\sum \sigma^2_i$)

Item	Variance
Q1	0.1398
Q1_v2	0.1398
Q3	0.0903
Q3_v2	0.0903
Q5	0.1828
Q5_v2	0.1828
Q7	0.2731
Q7_v2	0.2731
Q9	0.1570
Q9_v2	0.1570
Q11	0.1828
Q11_v2	0.1828
Total	2.151

Table 4. Cronbach's A Reliability Test

Dimension	Number of items	Cronbach's A	Reliability Level
Content Differentiation	3	0,65	Limited exploratory consistency
Process Differentiation	3	0,63	Limited exploratory consistency
Product Differentiation	3	0,64	Limited exploratory consistency
Inclusive Learning Differentiation	3	0,64	Limited exploratory consistency
Total	12	0,642	Limited exploratory consistency

variances (Levene's test) were verified. The results are presented in Table 5.

As shown in Table 5, no statistically significant differences were found between teachers and students across any of the four dimensions or the overall score (all $p > .05$). Effect sizes were small (Cohen's d ranging from 0.00 to 0.49). These findings suggest that both teachers and students perceived the implementation of differentiated instruction in a consistently positive manner, with no meaningful divergence between the two groups.

Comparison across Three Schools

A one-way ANOVA was conducted to examine whether perceptions of differentiated instruction differed significantly across the three school contexts: SMPM (urban), SMPJ (semi-urban/agrarian), and SMPP (coastal). The assumptions of normality and homogeneity of variances were met for all dimensions. The results are presented in Table 6.

The ANOVA results revealed no statistically significant differences across the three schools for any dimension (all $p > .05$), with small effect sizes (η^2 ranging from 0.005 to 0.035). Post-hoc tests were therefore not required. These findings indicate that

respondents' positive perceptions of differentiated instruction were consistent regardless of the school's socio-geographic context, whether urban (Malang), semi-urban/agrarian (Jember), or coastal (Probolinggo), which aligns with the inclusive and adaptive principles of the *Merdeka* Curriculum.

Taken together, the comparative analyses demonstrate that the implementation of differentiated instruction was not merely perceived positively in aggregate terms, but was perceived uniformly across different roles (teachers and students) and different school contexts. This consistency strengthens the argument that the proposed model is applicable across diverse educational settings within the *Merdeka* Curriculum framework.

The distribution of respondent perceptions is further illustrated through a diverging stacked bar chart (Figure 4), which visually separates negative and positive responses across the four dimensions. As shown in the figure, positive responses (Agree and Strongly Agree) accounted for over 90% of responses across all dimensions. The Inclusive Learning dimension exhibited the highest proportion of Strongly Agree responses (65.6%), while Product Differentiation showed the largest proportion of disagreement,

Table 5. Independent Samples T-Test Results: Teachers vs. Students

Dimension	Teacher Mean	Student Mean	Mean Diff	t	p	Cohen's d	Sig.
Content Differentiation	3.222	3.419	-0.197	-1.083	0.282	0.456	No
Process Differentiation	3.556	3.507	0.049	0.289	0.773	0.122	No
Product Differentiation	3.278	3.315	-0.037	-0.193	0.848	0.081	No
Inclusive Learning	3.778	3.593	0.185	1.172	0.244	0.494	No
Overall	3.458	3.458	0.000	0.000	1.000	0.000	No

Table 6. One-Way ANOVA Results: Comparison Across Three Schools

Dimension	SMPM (Urban)	SMPJ (Semi-U)	SMPP (Coastal)	F	p	η^2	Sig.
Content Differentiation	3.438	3.365	3.417	0.240	0.787	0.005	No
Process Differentiation	3.458	3.552	3.521	0.467	0.628	0.010	No
Product Differentiation	3.240	3.312	3.385	0.825	0.441	0.017	No
Inclusive Learning	3.625	3.510	3.677	1.672	0.193	0.035	No
Overall	3.440	3.435	3.500	0.513	0.601	0.011	No

consistent with its lower mean score.

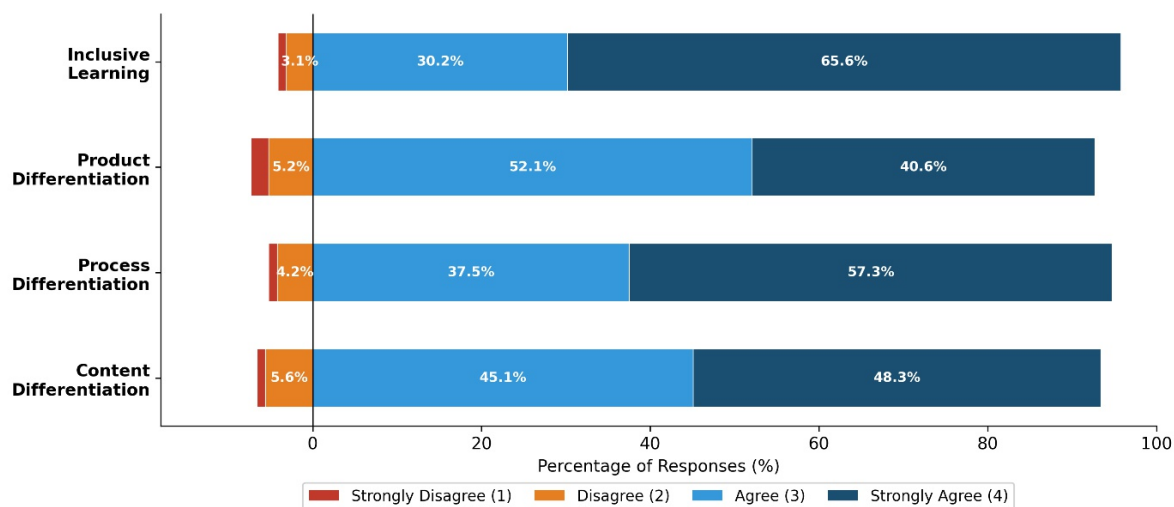
To complement the comparative statistical analyses, Figure 5 presents box plot distributions of perception scores. Panel (a) displays the comparison across the three schools (corresponding to the ANOVA), while Panel (b) displays the comparison between teachers and students (corresponding to the t-test). The overlapping distributions and comparable medians across all groups visually confirm the non-significant statistical findings reported in Tables 5 and 6.

Differentiated Learning Model at the Three Participating Schools

Through classroom observations, the researcher noted that the implementation of differentiated instruction emphasized exploring students' learning potential by tailoring

instruction to their learning styles and unique characteristics. learning was not limited to content delivery; it also encouraged active student engagement in constructing knowledge through systematic and reflective thinking. This was corroborated by teacher "I," who noted that initial screening using Google Form questionnaires served as an effective medium for mapping students' learning styles.

The model was organized into a learning syntax with five stages: *First*, exploration, stimulation, and problem-solving, in which teachers presented contextual phenomena often encountered by students in daily life. For example, in one observed lesson, the teacher initiated the lesson with a short video depicting contemporary moral dilemmas among teenagers, which prompted students to actively express their views. *Second*, information

**Figure 4.** Diverging stacked bar chart of respondent perceptions across four dimensions

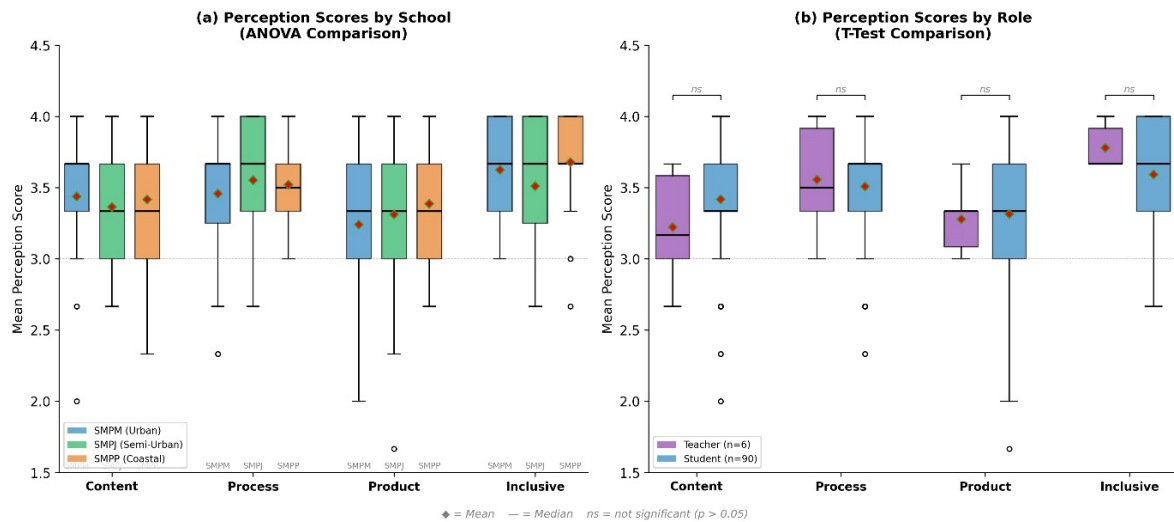


Figure 5. Box Plot Comparison of Perception Scores by School (a) and by Role (b)

gathering, where students were tasked with finding literature, both print and online, related to the classroom theme (as noted by teacher “N”). *Third*, information processing, in which students analyzed, compared, and synthesized the information into meaningful concepts. Teachers facilitated this by providing worksheets and mind mapping tools, such as during lessons on tolerance in Islam. *Fourth*, verification was carried out through student presentations and group discussions, which sharpened their understanding as they articulated concepts to their peers. *Fifth*, Generalization, where students drew new conclusions from the group discussions and linked them to real-life contexts. As student “C” remarked:

“I felt both happy and nervous when presenting our group discussion in front of my classmates. Happy, because I could show my ability, and nervous, because I had to speak in front of everyone. However, through this, I understood the material more deeply”.

These findings highlight that differentiated instruction at SMPM, SMPJ, and SMPP was systematically constructed within an educational framework that values holistic learning, spanning from careful planning to the achievement of expected learning outcomes.

The practice of mapping students’ learning styles through questionnaire administration at the research site reinforces Tomlinson’s (2021) emphasis on responding to learner diversity. It is also consistent with the principle of intentional instructional design discussed by Wiggins and McTighe (2005). A key finding of this study is that differentiated instruction in presents distinct pedagogical

challenges compared to many general subjects. In , teachers must tailor their approaches to students’ readiness, learning preferences, and participation while also preserving the normative and moral-spiritual aspects of religious content. This requires not only varied methods, materials, and assignments but also the fostering of students’ reflection, the internalization of values, and responsible practice.

The contextual uniqueness of the proposed model should therefore be understood at both the macro and operational levels. At the macro level, the four core components (initial assessment, flexible planning, varied implementation, and continuous evaluation) are not treated as generic procedural stages, but as pedagogical mechanisms adapted to the moral-spiritual purposes of . Initial assessment functions to identify not only academic readiness but also students’ preparedness to engage religious themes reflectively. Flexible planning ensures that differentiated activities remain aligned with Islamic values and the objectives of character formation. Varied implementation provides adaptive pathways for learning while preserving the substantive integrity of religious content. Continuous evaluation extends beyond academic performance to include students’ reflective participation, moral reasoning, and responsible application of learning.

At the operational level, each instructional stage also carries a -specific emphasis. Exploration and stimulation begin from contextual ethical or religious issues familiar to students’ lives. Information gathering encourages students to access both general learning resources and relevant Islamic

references. Information processing involves comparing, interpreting, and connecting religious meanings with lived experience. Verification is conducted not only to check conceptual understanding, but also to clarify moral reasoning through discussion and presentation. Generalization culminates in value-based conclusions and practical implications for students' everyday conduct. In this sense, the proposed model is contextually distinctive because it integrates differentiated pedagogy, information processing, and Islamic moral-spiritual learning within one coherent framework.

The analysis conducted by the researcher indicates that differentiated instruction at SMPM, SMPJ, and SMPP is grounded in the information-processing model. This argument is grounded in the exploration of students' learning potential through initial screening at the start of instruction. Identifying students' potential enables teachers to explore appropriate strategies and methods tailored to each student's characteristics, as noted in prior research (Boelens et al., 2018; Mondy et al., 2021). This confirms that the integration of diagnostic assessment into practice has not been extensively discussed in earlier studies, making this research contribution original in its linking of initial assessment to the effectiveness of differentiation.

In other words, teachers' understanding of how to guide students through challenging tasks in line with their potential demonstrates teachers' real competencies in providing emotional and instructional support. (Matthews, 2020). Emphasizing the teacher's role as a reflective facilitator is crucial, as prior studies have tended to focus solely on cognitive dimensions. In contrast, the present findings highlight the need to strengthen students' affective and spiritual dimensions through differentiated models.

The design of strategies and instructional methods, such as group discussions, simulations, and the use of visual media, implemented at SMPM, SMPJ, and SMPP, reflects the principles of effective differentiated instruction, as discussed in prior studies (Muh. Asriadi et al., 2023; Shareefa & Moosa, 2020; Tomlinson, 2004). However, the uniqueness of this study lies in its integration of Islamic values, which distinguishes from other subjects. Thus, the findings of this research confirm that differentiation is not only optimizes academic outcomes but also supports the formation of students' religious character.

Clearly, the differentiated learning model implemented at SMPM, SMPJ, and SMPP can be classified as an information processing

model, as conceptualized by Joyce, Weil, Calhoun (2003b). This model emphasizes the development of critical thinking and complex information-processing skills (Rahmah et al., 2025), aligning with the objectives of instruction at the school. Positioning within the framework of information processing constitutes the theoretical contribution of this study, since earlier literature has not explicitly established the link between Joyce & Weil's theory and religious instruction in multi-site contexts.

More specifically, the relationship between differentiation and information processing in this study is functional rather than parallel. During exploration, differentiated content helps teachers present moral-religious issues through varied entry points that attract students with different readiness levels. During information gathering, content and process differentiation enable students to access materials from different sources and through different learning modes. During information processing, process differentiation provides multiple pathways for analyzing, interpreting, and organizing meaning. During verification and generalization, product differentiation enables students to demonstrate understanding and formulate value-based conclusions in different forms. This sequence shows that differentiation strengthens each phase of information processing by making religious learning more accessible, reflective, and contextually relevant.

In detail, the information-processing model applied through differentiated instruction at SMPM, SMPJ, and SMPP is described as follows. *First*, the instructional syntax at the research site refers to how students gather or receive environmental stimuli, organize data, solve problems, discover concepts, and employ verbal and visual symbols. *Second*, the principle of reaction emerged from teachers' adaptation across participating schools to students' knowledge levels and cognitive capacities, resulting in differentiated forms and workloads for each student. *Third*, the social system designed in the classroom was cooperative. Teachers acted as controllers and facilitators of reflective and participatory interaction, conditioning the learning environment and monitoring students from the initial reception of information through to the formulation of new understandings.

Fourth, the support system of differentiated instruction lies in the harmony between the school curriculum and teachers' adaptation to students' learning preferences. Such adaptation is important to create an inclusive, relevant, and contextual learning

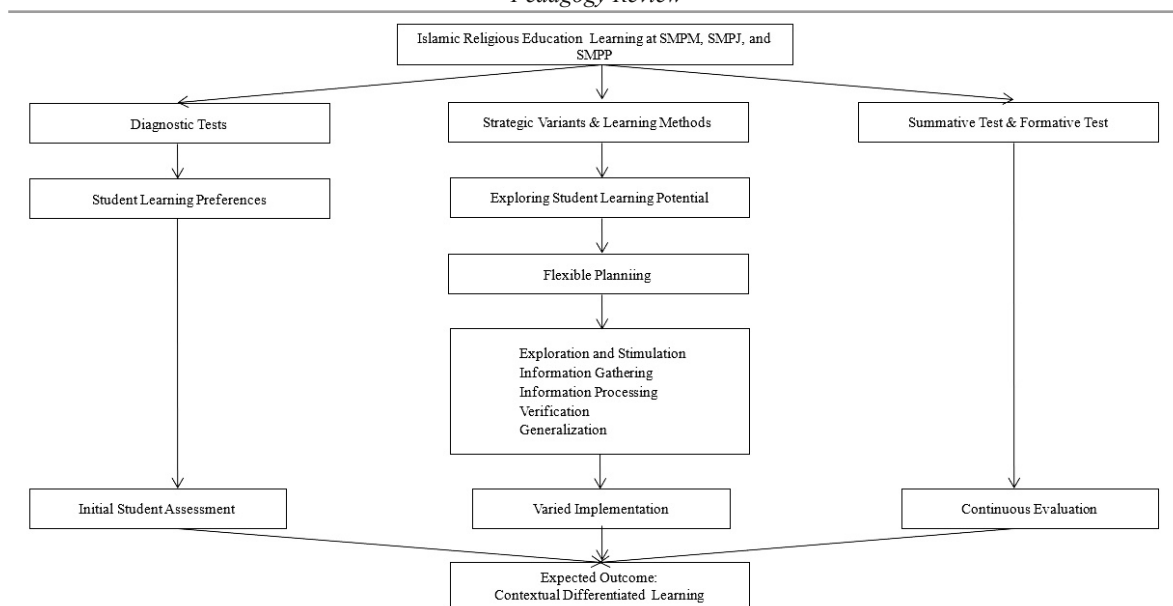


Figure 6. Proposed model of contextual differentiated instruction

environment. *Fifth*, the instructional and nurturant effects of differentiated instruction fostered students' attention to Islamic reasoning and a deeper understanding of concepts, moving beyond rote memorization toward conceptual and applied comprehension. This demonstrates a balance between knowledge mastery and spiritual development, which is rarely found in differentiation studies of general subjects.

The quantitative findings described earlier measured students' perceptions of differentiated instruction across the three schools and yielded a Cronbach's α of 0.642. In other words, a Cronbach's A value of 0.60–0.70 indicates acceptable reliability for small-scale exploratory research. Compared with other studies, this reliability level is consistent with exploratory educational studies in similar contexts, such as Boelens (2018), which showed that values between 0.60 and 0.70 are still acceptable in limited-scale studies. Thus, these quantitative results reinforce the validity of the qualitative findings, which demonstrated that students perceived differentiated instruction at the research site (content, process, product, and inclusive learning environment) positively. More specifically, the interpretation of the scores indicated that students directly experienced the diversity of instructional strategies used by teachers and felt supported in an inclusive, varied learning process. However, follow-up studies with larger respondent samples are still needed.

Based on this analysis, the syntax of differentiated instruction at SMPM, SMPJ, and

SMPP are trusted to provide opportunities for students to develop cognitively, emotionally, and spiritually in ways that aligned with their individual characteristics. Accordingly, the researcher formulated a differentiated instructional model for SMPM, SMPJ, and SMPP, comprising at least four core components: initial student assessment, flexible instructional planning, varied implementation, and continuous evaluation. These findings affirm that the present study offers practical contributions for teachers in designing more responsive instruction and theoretical contributions in linking the practice of differentiated instruction with Joyce & Weil's framework in multi-site contexts. The researchers visualize the findings and analysis through the following figure:

■ LIMITATIONS

This study has several limitations. First, the quantitative instrument showed only limited internal consistency (Cronbach's $\alpha = 0.642$), suggesting that readers should interpret the quantitative findings cautiously. Second, the sample comprised only 96 respondents across three schools, limiting the generalizability of the findings. Future studies are therefore needed to refine the instrument, expand the sample, and test the model through stronger analytical or experimental designs.

■ CONCLUSION

This study finds that differentiated Islamic Religious Education instruction in the three secondary schools was characterized by

planning, varied classroom strategies, and systematic evaluation, all of which reflected the principles of the *Merdeka* Curriculum. Qualitative analysis identified four core elements: initial assessment, flexible planning, varied implementation, and continuous evaluation. The implementation process included five instructional stages: exploration and stimulation, information gathering, information processing, verification, and generalization.

The quantitative findings should be interpreted as descriptive support indicating that respondents generally perceived the implementation of differentiated instruction positively, rather than as evidence of causal effectiveness. The research instrument demonstrated a Cronbach's A score of 0.642 based on 96 responses, which falls within the acceptable range for exploratory studies. At the same time, the perceptions of 96 respondents (teachers and students) yielded an average score of 3.4 (interpreted as "agree") across all dimensions of differentiation (content, process, product, and inclusive learning environment).

Theoretically, this study addresses a gap in the literature by reaffirming the relevance of the information-processing model in the context of and by bridging modern pedagogical theories and the practice of religious education. In practice, the model developed in this study can serve as a strategic reference for teachers and schools to strengthen curriculum policies, resource provision, and teacher training. Nevertheless, the limited number of respondents highlights the need for further studies with larger sample sizes, experimental designs to assess the impacts on academic achievement and character development, and the integration of digital technologies to optimize the implementation of differentiated instruction in hybrid learning contexts.

■ CONFLICTS OF INTEREST

The authors of this article declare that they have no potential conflict of interest.

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■ DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors affirm that artificial intelligence (AI) tools (Grammarly, Reference Manager, and Scopus AI) were used in the preparation, writing, analysis, or any other aspect of the work related to the submitted manuscript.

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