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Integrated Pedagogical Roles of Biology Teachers in Addressing Learning Barriers in a Pesantren-Based Secondary School

[1]*Muhamad Ikhsan, [2]Sri Erny Muliyani

Mandalika University of Education, Jl. Pemuda No. 59A, Mataram 83125, Indonesia
*Corresponding Author e-mail: : muhamadikhsan@undikma.ac.id

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Abstrak

This study examines how biology teachers at SMAS Darul Falah Mataram address learning barriers within a pesantren-based secondary school characterized by intensive religious routines and limited instructional resources. The study focuses on the integrated roles of teachers as educators, instructors, and mentors in responding to academic, behavioral, and emotional challenges. A qualitative descriptive design was employed with eight purposively selected participants, including one biology teacher, four students, the principal, and two vice principals. Data were collected through classroom observations, semi-structured interviews, and document analysis, then analyzed using the interactive model of data condensation, data display, and conclusion drawing. Source and method triangulation were used to strengthen credibility. The findings show that teachers enact three mutually reinforcing roles: modeling discipline and ethical conduct as educators; applying contextualized explanation, adaptive clarification, limited digital media, and remedial support as instructors; and providing emotional guidance, individualized assistance, and autonomy support as mentors. These integrated practices help mitigate learning barriers while supporting students' cognitive engagement and character development. The study concludes that multidimensional teacher roles are central to adaptive biology teaching in resource-constrained pesantren settings.

Keywords: biology education; teacher roles; mentoring; contextual pedagogy; pesantren education

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INTRODUCTION

SMAS Darul Falah Mataram is a senior secondary school operating under the Darul Falah Islamic Boarding School. Its students live dual lives as formal learners and full-time santri, participating in intensive religious activities while pursuing general academic education. This integration presents distinct pedagogical challenges, particularly in subjects such as biology that require continuous intellectual engagement, hands-on experimentation, and independent learning. Among the most pressing issues is the students' lack of time for focused study due to their rigid schedule, which negatively impacts their performance in science subjects. As noted by Munandar et al. (2025), such time constraints, when coupled with limited resources like laboratories and libraries, significantly impede effective science instruction.

Students at SMAS Darul Falah struggle not only with academic time management but also with access to essential educational infrastructure. The unavailability of supportive resources such as laboratories and libraries restricts practical experiences and deeper conceptual understanding. Islam (2021) highlights how the lack of hands-on facilities reduces students' capacity for scientific inquiry, while Li et al. (2022) emphasize disparities in

academic achievement in science subjects due to geographic and institutional resource inequality. These compounded challenges reflect systemic issues prevalent in *pesantren*-based institutions across Indonesia.

Inadequate facilities alone, however, do not fully account for the barriers to biology education in such settings. Teaching quality, particularly the ability and mindset of educators, plays a pivotal role. Mas (2008) underscores the importance of teacher competence in achieving educational success, while Robikhah & Nurmawati (2021) identify both internal and external factors as sources of instructional difficulties. Teachers with limited self-awareness of their strengths or who adopt narrow views of their role often hinder rather than support student progress.

Zendrato (2016) explains that a teacher's function should extend beyond delivering material to mentoring and motivating learners. When teachers fail to see themselves as facilitators of holistic student development, the learning environment becomes less conducive to engagement. The problem worsens when teachers harbor pessimistic views about their influence or capabilities. Robikhah & Nurmawati (2021) note that such pessimism leads educators to generalize specific teaching challenges into broader feelings of inefficacy, which in turn reduces their effectiveness.

Additionally, the absence of media and technology in the classroom is a critical external barrier. Munandar et al. (2025) emphasize that effective media serves as a bridge between complex material and student comprehension. Without access to interactive and illustrative teaching tools, student engagement wanes, and biology becomes abstract and inaccessible.

Learning barriers also stem from student-specific factors. Nasution et al. (2025) categorize these as individual (e.g., health and emotional state), social (e.g., peer and family influences), and structural (e.g., pedagogy and policy). In *pesantren* settings, these dimensions often intersect. For example, a student dealing with family issues may struggle to concentrate, and this distraction, compounded by rigid pedagogy, can severely limit learning. Such compounded limitations illustrate the need for integrative and adaptive instructional approaches.

Despite these complex challenges, research that holistically examines how teachers navigate them in integrated religious schools remains limited. Most prior studies tend to isolate variables such as teacher discipline (Haliza & Suryatik, 2024), pedagogical efficacy (Rachmawati & Kaluge, 2020), or teacher personality traits (Ramadhani et al., n.d.). This study seeks to bridge that gap by investigating how biology teachers at SMAS Darul Falah Mataram enact three interrelated roles: educator, instructor, and mentor. As educators, they model professional behavior and ethical standards. As instructors, they simplify complex materials and adapt teaching strategies to student needs. As mentors, they offer psychosocial support and guide personal development.

The novelty of this study lies in its contextual and integrated exploration of these three roles. While earlier literature has dissected individual components of teaching, few have examined their intersection within the constraints of a *pesantren* system. By focusing on how biology teachers manage academic instruction, moral guidance, and personal mentorship in a singular institutional framework, this research contributes a nuanced understanding of teacher adaptability and impact.

This study also responds to the call for educational research that acknowledges cultural and institutional specificities. By using a *pesantren*-based context, it contrasts with previous studies conducted in more secular or urban settings, thus offering a fresh perspective. Unlike conventional secondary schools, *pesantren* impose unique demands on students and teachers alike, making it imperative to investigate how educational strategies must evolve to suit such settings.

The objectives of this study are threefold: (1) to analyze how biology teachers at SMAS Darul Falah serve as role models in fostering discipline and ethical behavior; (2) to assess the

effectiveness of instructional strategies used to convey complex biology material within resource-constrained environments; and (3) to explore the mentoring roles teachers assume to address students' emotional and cognitive development.

Indicators under investigation include the consistency of teacher behavior in upholding discipline (Haliza & Suryatik, 2024), the use of adaptive instructional methods for concept delivery (Rachmawati & Kaluge, 2020), and the emotional responsiveness of teachers in student engagement (Ramadhani et al., n.d.). These indicators are framed within the broader context of educational equity and the need for responsive teaching in under-resourced institutional settings.

This study employs a qualitative descriptive method, collecting data through classroom observation, interviews, and documentation. Analysis follows the interactive model of Miles, Huberman, and Saldana (2013), involving data condensation, display, and conclusion drawing. Triangulation of sources and techniques ensures the validity and reliability of findings.

This research contributes to the discourse on teacher professionalism and pedagogical adaptation in Islamic boarding school environments. It highlights that the effectiveness of biology instruction in *pesantren*-based schools hinges not solely on curriculum or infrastructure but on the ability of teachers to embody multiple roles simultaneously. By integrating ethics, instruction, and emotional support, biology teachers can meaningfully overcome the layered barriers to student learning, thereby promoting more equitable and effective education outcomes.

METHOD

This research employed a qualitative descriptive method conducted at SMAS Darul Falah Mataram. The qualitative approach was chosen to explore the complexities of teacher roles—educator, instructor, and mentor—in overcoming student learning barriers in a *pesantren*-based setting. According to Moleong (2019), qualitative research seeks to understand phenomena through descriptive data such as observed behavior, interviews, and documents. This method is especially effective in educational settings where in-depth insights into human interactions and institutional dynamics are essential (Anjasmari & Nor'aini, 2023).

Research Design and Process Flow

The study followed a descriptive-qualitative design with an emphasis on interpretive understanding of educational practices. The research process consisted of five main phases: (1) identifying research objectives and instruments, (2) selecting participants through purposive sampling, (3) conducting observations, interviews, and document analysis, (4) data condensation, display, and conclusion drawing, and (5) triangulation and validation.

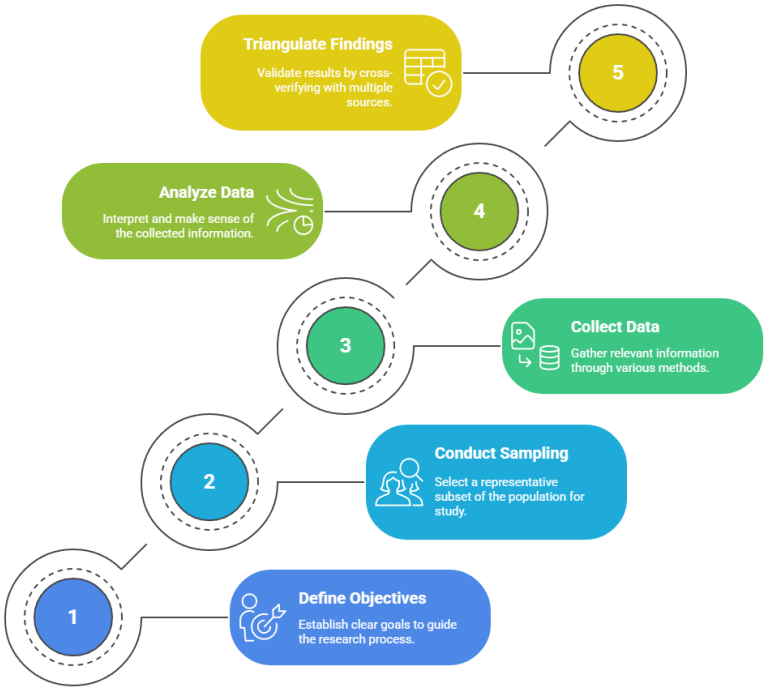

Figure 1. Research Process Flow

Participants and Sampling Technique

This study involved 8 participants selected through purposive sampling. The sample included: one biology teacher, four students from grades XI and XII, the head of the school, and two vice principals responsible for academic affairs. Purposive sampling was used to ensure that only those with direct experience relevant to the study's focus were selected. This method increases reliability by capturing deep, case-specific insights (Zega et al., 2023).

Table 1. Participant Demographics

Participant Role	Number	Criteria
Biology Teacher	1	Teaching biology at SMAS Darul Falah for >3 years
Students (XI & XII)	4	Actively involved in biology learning
Principal	1	In charge of school policies
Vice Principals	2	Overseeing academic program implementation

Data Collection Techniques

Three primary techniques were used: observation, interviews, and documentation. Passive participant observation was conducted during biology classes. The researcher did not interfere with the process but took detailed field notes on teaching activities related to educator, instructor, and mentor roles. Semi-structured interviews were conducted with all participants. Interview questions were designed to capture perceptions and practices concerning discipline modeling, instructional clarity, and mentoring support. Each interview lasted 30–45 minutes and was conducted in a face-to-face setting. Relevant institutional documents such as biology lesson plans (RPP), syllabus, school profiles, student performance records, and facility inventories were reviewed to corroborate data gathered from observations and interviews (Apriyani et al., 2021).

Data Analysis Techniques

The data analysis employed Miles, Huberman, and Saldana's (2014) interactive model, which consists of three steps: (1) **Data Condensation**: Field notes, interview transcripts, and documents were coded and organized to identify emerging themes; (2) **Data Display**: Data

were visualized in matrices and narrative formats to facilitate interpretation and pattern recognition; and (3) **Conclusion Drawing and Verification**: Initial findings were continually refined and validated through re-checking with participants and cross-referencing with multiple sources.

Validity and Reliability Measures

To ensure data credibility and reliability, the study applied two triangulation strategies: (1) **Source Triangulation**: Data were collected from multiple perspectives—teachers, students, administrators—to validate consistency and (2) **Method Triangulation**: Observations, interviews, and document analysis were used concurrently to confirm findings across different data types. In addition, a detailed audit trail was maintained to document the research process and enable reproducibility.

Ethical Considerations

All participants were informed about the study's objectives and signed consent forms before participation. Anonymity and confidentiality were strictly maintained throughout the research.

Strengths and Limitations of the Method

Qualitative descriptive methods allow deep engagement with participants' lived experiences, enabling a rich understanding of teacher-student dynamics (Berger et al., 2023; Fahriyan, 2023). However, the method's interpretative nature introduces subjectivity and limits generalizability. As noted by Adeoye et al. (2024), findings from such studies must be contextualized within the specific educational setting. The chosen methodology aligns well with the study's objective of capturing the nuanced and integrated roles of biology teachers in a *pesantren*-based school context. The rigorous data collection and triangulation procedures strengthen the study's trustworthiness and relevance.

RESULTS AND DISCUSSION

Teacher as Educator: Modeling Discipline and Ethical Values

This section presents the findings related to the role of biology teachers as educators, particularly how they instill discipline and model ethical behavior to overcome learning barriers. Thematic analysis of interviews and classroom observations yielded three core themes: (1) teacher as a role model of discipline, (2) use of educative sanctions, and (3) internalization of ethical values in school norms.

Table 2. Summary of Themes and Supporting Evidence

Theme	Indicators	Source
Role Model of Discipline	Punctuality, personal conduct, consistency in rules	Observation, Teacher interview
Educative Sanctions	Task-based consequences for rule violations	Student and Teacher interview
Ethical Value Internalization	Encouragement of respect, responsibility, school culture	Principal and Student input

Modeling Discipline

Teachers at SMAS Darul Falah serve as discipline models by consistently demonstrating responsible behavior. The biology teacher's habit of arriving on time and monitoring students' materials before each class illustrates how punctuality and preparedness are modeled. One informant (Teacher A) noted, "*As a teacher, I always remind students to bring their textbooks and set a rule agreed upon together: those who forget must complete a summary or create a mind map during the lesson.*" This practice illustrates how the teacher's consistency in upholding rules establishes a disciplined routine. According to Suliyanah et al. (2023), such

modeling reinforces positive behavioral norms among students. Observations confirmed that students were more likely to follow rules when teachers consistently upheld them.

Educative Sanctions

The teacher implements instructive consequences, such as requiring students who forget learning materials to summarize the lesson or create mind maps. These sanctions are not intended as punishment but as a learning opportunity. As stated by one student (Student C), "*Even if we forget the book, we can't just sit idle. We are asked to summarize or do exercises, so we don't miss the lesson.*" This aligns with Jayasuriya-Illesinghe et al. (2021), who emphasize that authentic teacher behavior and fair consequences promote student compliance and respect.

Ethical Values and Norm Building

Interviews with school leaders and students revealed that the teacher reinforces values such as honesty, respect, and responsibility. The school principal (Informant B) remarked, "*We observe that this teacher models behavior consistently – she's never late and always checks if students are ready. That's how students learn discipline.*" A student (Student D) affirmed, "*Even when friends are late or forget their books, she doesn't get angry, but reminds us firmly. That makes us feel responsible.*" These align with the findings of Hussain et al. (2024), who highlight that ethical teacher conduct fosters a respectful school culture.

Comparative and Theoretical Analysis

The findings correspond with prior studies that show the powerful role of educators in shaping classroom norms. Tian and Shen (2023) assert that strong teacher-student relationships enhance academic motivation. Similarly, Lin and Chang (2022) emphasize that disciplinary practices rooted in respect encourage engagement.

Compared to other studies in non-religious schools, this study highlights a unique context in *pesantren*-based institutions where character education is not only encouraged but culturally embedded. The integration of Islamic values into discipline strategies adds a moral-religious dimension to behavioral management not always present in secular contexts (Rahayu et al., 2023).

While the data show that teacher modeling is effective in promoting discipline, challenges remain. Not all students consistently respond to discipline measures, particularly in large classrooms where monitoring is more difficult. Furthermore, the lack of institutional support for structured character education programs limits the potential for school-wide implementation. Nonetheless, the teacher's initiative in applying task-based sanctions and modeling integrity lays a strong foundation for value formation.

These findings support the theory that discipline, when embedded in ethical modeling, forms the basis of effective education. Granger et al. (2024) and Merle et al. (2024) emphasize that teachers who create a psychologically safe and ethically grounded classroom promote both academic and emotional well-being. Kusumo et al. (2024) further argue that collaborative, discussion-based moral learning enhances ethical reasoning.

The role of the biology teacher as an educator at SMAS Darul Falah is manifested in her consistent discipline, fair application of sanctions, and integration of ethical values into daily classroom practices. These efforts not only address student behavioral issues but also contribute to the development of a moral learning environment that supports both cognitive and character development.

Teacher as Instructor: Clarifying Concepts through Contextual and Adaptive Methods

This section explores the instructional strategies employed by biology teachers to enhance understanding and engagement among students. Thematic analysis from observations and interviews identified four major themes: (1) contextualized instruction, (2) adaptive repetition and clarification, (3) media-supported delivery, and (4) remedial and enrichment strategies.

Table 3. Instructional Themes and Field Evidence

Theme	Indicators	Source
Contextualized Instruction	Use of everyday examples, relevance to student life	Teacher and Student interview
Adaptive Clarification	Repetition, alternative explanations, student inquiry	Observation, Teacher and Student
Media-Supported Delivery	Use of projector, digital aids, visual reinforcement	Observation, Principal interview
Remedial and Enrichment	Remedial tasks, LKS, evaluation through tests	Teacher and Administrator interview

Contextualized Instruction

The biology teacher often used real-world analogies to explain abstract content. For example, during the lesson on the human regulatory system, the effects of drug abuse were illustrated through case examples relevant to student environments. One student (Student A) shared, "*She explained NAPZA by telling a story about someone who struggled with drug use. It helped me imagine how the brain reacts to those substances.*"

This strategy corresponds to Freitas et al. (2022), who demonstrate that contextual teaching enhances conceptual clarity and motivates learners through personal relevance. Similarly, Nemadziva et al. (2023) note that real-life connection promotes higher engagement and understanding of scientific principles.

Adaptive Clarification

Instruction was marked by flexibility in response to student difficulties. The teacher frequently repeated concepts when students seemed confused and invited them to explore the topic further using online resources. As noted by Teacher A, "*Sometimes students need a second or third explanation, or even an example from daily life. I usually rephrase and simplify without changing the substance.*" Students corroborated this approach. One student (Student B) stated, "*If we don't get it, she explains again in simpler terms or asks us to look it up. That really helps.*" This aligns with Ogegbo et al. (2024), who argue that effective instruction in low-resource settings depends on a teacher's adaptability and responsiveness to learner needs.

Media-Supported Delivery

Despite limited infrastructure, teachers leveraged available tools like projectors to enhance learning. Observations confirmed that materials were often supported by visual slides, and sometimes included internet-based videos. The school principal (Informant B) remarked, "*She prepares digital slides and uses visuals. That helps when the textbook isn't enough.*" This aligns with Shivolo et al. (2024), who advocate maximizing limited media through inter-school resource sharing and visual learning aids. Effective use of even minimal digital tools supports comprehension and compensates for textbook deficiencies.

Remedial and Enrichment

The teacher implemented structured remedial strategies, including additional assignments and quizzes for students scoring below the standard. She also provided enrichment through daily quizzes and Lembar Kerja Siswa (LKS) to reinforce learning. As Teacher A noted, "*We track students who are struggling and give extra questions or ask them to do summaries.*" Students confirmed the availability of additional support. One student (Student C) shared, "*If I fail a test, I get a chance to repeat it or do extra assignments. It helps me catch up.*" These practices reflect Chowdhury & Rankhumise (2022), who emphasize the importance of reinforcement and low-stakes assessments in deepening biology understanding.

Comparative and Theoretical Insights

Compared to prior research in secular contexts, the instructional approach in SMAS Darul Falah is uniquely situated within *pesantren* routines, necessitating greater pedagogical flexibility. Mudau & Netshivhumbe (2021) and Nemadziva et al. (2023) found that contextual and remedial instruction enhances learning in time-constrained environments—findings echoed here. Additionally, while many rural schools struggle to use ICT tools due to lack of access (Ogegbo et al., 2024), this study shows that even minimal digital resources can support comprehension when effectively utilized.

Instructional success in this study was linked not just to tools or techniques but to teacher intentionality. The willingness to repeat material, connect lessons to real-life, and offer individualized support reflects a high level of instructional commitment. However, the lack of consistent laboratory access and limited multimedia content remain significant constraints. Moreover, while students benefit from real-world examples, some topics—especially highly technical content—may still require more structured scaffolding. Future improvements could involve integrating community-based biology projects or peer teaching models to reinforce classroom instruction.

The findings support constructivist views that effective teaching in science involves scaffolding knowledge through meaningful experiences (Mudau & Netshivhumbe, 2021). Inquiry-based and contextualized methods enable students to reconstruct understanding based on prior knowledge and social context. The role of the biology teacher as an instructor at SMAS Darul Falah is exemplified by adaptability, contextualization, media use, and targeted remediation. These strategies foster understanding and engagement even under constrained conditions, reflecting an adaptive pedagogy that is both culturally relevant and educationally effective.

Teacher as Mentor: Fostering Motivation and Self-Regulation through Emotional Support

This section discusses the role of biology teachers as mentors, focusing on how emotional guidance, motivation, and individualized support contribute to overcoming students' learning barriers. Based on thematic coding of interview transcripts and observational field notes, four themes emerged: (1) emotional engagement and motivation, (2) individualized attention and feedback, (3) responsive intervention for learning challenges, and (4) fostering student autonomy.

Table 4. Mentoring Themes and Field Evidence

Theme	Indicators	Source
Emotional Engagement & Motivation	Praise, encouragement, patience	Teacher and Student interview
Individualized Attention	One-on-one help, checking on struggling students	Observation, Teacher interview
Responsive Interventions	Task redistribution, peer assistance, re-explanation	Teacher and Student interview
Fostering Student Autonomy	Encouraging peer questions, guiding self-learning	Observation, Student interview

Emotional Engagement and Motivation

Mentorship often began with emotionally supportive interactions. Students who were distracted or anxious received individual attention. Teacher A explained, "*Sometimes I see a student distracted, so I walk over and ask them gently what's bothering them. Just being asked makes them return their focus.*" A student (Student E) shared, "*She's never harsh. When we're not focused, she reminds us nicely or asks us a question to get our attention back. That makes us feel seen and want*

to learn more." This approach is supported by Mallik (2023) and Wang et al. (2024), who found that emotional engagement significantly increases students' motivation and resilience.

Individualized Attention and Feedback

Mentoring was personalized to student needs. When students failed to bring textbooks, the teacher arranged book-sharing or loaned summary sheets. As Teacher A explained, "*Not everyone comes prepared. I carry summaries or ask someone to share a book. The goal is to not let anyone fall behind.*" Students acknowledged this support. Student F stated, "*Once, I forgot my book and she lent me her printout. Another time, she explained again just for me after class.*" These interactions reflect Liu & Mantuhac (2024), who emphasize that emotional and logistical support boosts student engagement and ownership.

Responsive Interventions for Learning Challenges

The teacher identified students who struggled during class and took immediate action. Observations showed that students who hesitated to participate were encouraged through low-stakes tasks or paired with peers. Principal B noted, "*She doesn't shame students. If someone is weak, she just shifts the task or lets them answer with a friend.*" These findings align with Neve et al. (2022), who observed that perceived emotional support reduces academic anxiety and fosters persistence. Similarly, Li et al. (2024) emphasize that mentorship mitigates academic burnout, a condition especially common in rigorous learning environments like *pesantren*.

Fostering Student Autonomy

Mentorship extended beyond support into empowerment. Students were encouraged to ask each other for help before turning to the teacher. This practice instilled self-regulation and accountability. As Teacher A explained, "*I always say, ask your classmate first. It builds independence. If they still struggle, I step in.*" This mentoring strategy resonates with Wu & Kang (2023) and Liu (2024), who found that students exposed to emotionally supportive and autonomy-promoting environments exhibit stronger learning engagement and self-regulated behaviors.

Comparative and Theoretical Discussion

Compared to traditional instructional models, mentorship in this *pesantren* setting involved greater emotional labor. Unlike formal academic mentoring observed in urban or secular schools, the teacher in this study merged moral responsibility with emotional nurturing, consistent with Islamic educational values. These findings mirror Wang et al. (2024) and Liu (2024) who describe mentorship as a balance between academic scaffolding and emotional guidance. While some prior studies emphasize cognitive mentorship, this research demonstrates that emotional mentorship is foundational—especially where educational pressures are high. The presence of nurturing guidance enables students to overcome both academic and psychological obstacles.

Although the mentoring was responsive and compassionate, the burden fell primarily on the teacher without structured institutional support. The absence of dedicated school counselors or structured mentorship frameworks means that much of the emotional labor is shouldered by classroom teachers. Nevertheless, the teacher's holistic approach proved effective, as students not only improved academically but also reported higher emotional comfort. Future improvements might include peer-mentoring programs or formalized reflection sessions to expand mentoring impact beyond the individual teacher.

The findings reinforce that mentoring built on emotional engagement, individualized guidance, and autonomy-support fosters resilience and sustained learning (X. Liu, 2024; Wu & Kang, 2023). When students perceive that they are respected, valued, and supported, they are more likely to invest emotionally and cognitively in their learning. The biology teacher's mentoring approach at SMAS Darul Falah combined emotional attentiveness, academic responsiveness, and personal empowerment. This multifaceted role enabled students to overcome psychological and cognitive learning barriers, fostering both academic performance and moral development in an integrative manner.

Discussion

This study explored the role of biology teachers at SMAS Darul Falah Mataram in addressing student learning barriers by enacting three interrelated functions: educator, instructor, and mentor. The findings reveal that each role contributes uniquely yet synergistically to both academic and character development, particularly within the context of pesantren-based secondary education. This discussion integrates theoretical frameworks, comparative insights from global literature, and reflective considerations of the local educational environment.

Educator: Ethical Modeling and Disciplinary Influence

The role of teachers as ethical role models was pivotal in shaping students' behavior and promoting classroom discipline. Teachers' demonstration of punctuality, fairness, and integrity significantly influenced students' willingness to follow school rules. This finding aligns with Rachmawati & Kaluge (2020), who emphasized the need for teacher behavior to reflect institutional values, thereby fostering a conducive learning environment.

Additionally, the application of educative sanctions rather than punitive measures parallels Haliza & Suryatik (2024), who assert that moral responsibility and professionalism are core components of the teaching ethic. Teachers at SMAS Darul Falah demonstrated this by turning infractions into learning opportunities, thereby internalizing discipline within character-building processes. However, this model assumes a high level of teacher moral consistency, which may not be sustainable without institutional reinforcement.

Instructor: Contextual Pedagogy and Differentiated Teaching

In their role as instructors, biology teachers adopted contextualized teaching strategies to overcome content complexity. By embedding biology concepts into everyday life examples, they promoted meaningful learning—consistent with the principles of constructivist theory and the scaffolding model (Vygotsky & Cole, 1978). These approaches were especially effective for abstract topics like human regulatory systems, where students benefited from relatable illustrations.

The strategies employed resonate with Freitas et al. (2022) and Mudau & Netshivhumbe (2021), who advocate for the contextualization of science education as a means of increasing student comprehension and motivation. Additionally, remedial interventions and tailored feedback echoed Mulyasa's pedagogical stages, emphasizing responsiveness to students' cognitive zones of proximal development. This situates the instructional practice within a differentiated learning framework.

Despite these strengths, limited institutional resources hinder the broad application of these methods. For instance, reliance on teacher creativity in lieu of structured instructional resources places a disproportionate burden on educators, risking burnout and inconsistencies across classes.

Mentor: Emotional Guidance and Self-Regulated Learning

The teacher's mentoring role was characterized by emotional engagement and personalized guidance. These findings reinforce Neve et al. (2022) and Wang et al. (2024), who highlight the importance of emotional support in enhancing students' self-regulation and resilience. Teachers in this study guided students not only academically but also psychosocially, responding to learning difficulties with empathy and individualized interventions.

This approach aligns with Liu & Mantuhac (2024), who posit that emotional scaffolding—alongside cognitive instruction—optimizes student motivation and achievement, particularly in high-pressure contexts. The teacher's use of peer-assisted learning and inquiry-based questioning also reflects principles of collaborative learning, suggesting that mentoring fosters autonomy while maintaining teacher oversight.

Nevertheless, these mentoring practices were largely informal, depending on the personal commitment of individual teachers. Without institutional mentoring structures or

trained guidance counselors, the sustainability and scalability of these approaches are limited. This represents a key area for policy improvement in pesantren-based schools.

Theoretical Integration and Limitations

The synthesis of educator, instructor, and mentor roles in this study corresponds with Jumahir et al. (2023) and Fanani (2023), who emphasize the integrative nature of holistic teaching practices. This triadic role fosters a learning environment that addresses both cognitive and moral development, consistent with character education models advocated by Tariq & Adil (2020) and Broer et al. (2024).

Moreover, the application of scaffolding, self-regulation, and contextual learning frameworks mirrors international practices in high-stakes environments (Davis, 2021; Mallik, 2023). However, the pesantren context introduces religious and cultural dimensions that are absent from most global literature. These nuances enrich the discourse on culturally responsive teaching and suggest pathways for integrating faith-based values into holistic education.

This study's context-specific nature limits its generalizability. SMAS Darul Falah operates under unique religious and institutional norms that may not apply to secular or public schools. Additionally, the qualitative design, while rich in insight, may reflect the subjective biases of participants and researchers.

Nonetheless, this study contributes critical reflections on teacher practices within pesantren settings. The absence of formal mentoring policies, minimal access to teaching resources, and lack of structured character education programs present systemic challenges. Yet, the adaptive strategies of teachers demonstrate the potential of individual agency to mediate institutional constraints.

The three roles—educator, instructor, and mentor—emerge as interdependent dimensions of effective teaching in character-focused educational environments. Through ethical modeling, contextual instruction, and emotional mentoring, teachers at SMAS Darul Falah not only mitigate learning barriers but also cultivate students' moral and academic capacities. Future studies should explore how institutional supports and training frameworks can enhance these practices, ensuring their sustainability across diverse educational contexts.

CONCLUSION

This study confirms that biology teachers at SMAS Darul Falah Mataram adopt integrated roles as educators, instructors, and mentors to address students' learning challenges in a pesantren-based context. As educators, they embody professional discipline and moral integrity to model positive behavior. As instructors, they adapt pedagogical strategies to contextualize complex biology topics and implement differentiated instruction and remedial teaching. As mentors, they engage students emotionally and socially, facilitating focus, motivation, and self-regulation. These roles, enacted simultaneously, ensure the cognitive, emotional, and moral development of students, thereby fulfilling both instructional and character-educational goals.

The study holds significant implications for educational policy and practice. It highlights the importance of integrating pedagogical, emotional, and moral dimensions within the curriculum design of pesantren-based schools. Policymakers should incorporate teacher mentoring competencies into national teacher standards and evaluation frameworks. Training programs should emphasize reflective pedagogy and emotional intelligence. Furthermore, future research should adopt longitudinal or mixed-method approaches to evaluate the sustained impact of these integrated teacher roles on student academic and character outcomes.

RECOMMENDATIONS

School administrators should prioritize improvements to infrastructure and educational facilities, ensuring that regular audits and strategic investments are conducted in

alignment with evolving pedagogical needs. Simultaneously, biology teachers must be continuously supported through targeted professional development programs that emphasize inquiry-based and contextual learning strategies, which are essential in overcoming both conceptual and environmental learning barriers. In addition, science curricula should be revised to embed character education more explicitly, thereby promoting holistic development that integrates academic learning with moral and emotional growth. Finally, future research is encouraged to adopt quantitative or longitudinal approaches to rigorously assess the long-term effectiveness of these integrated teacher strategies, particularly their impact on measurable academic performance and behavioral development in pesantren-based educational settings.

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