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Efforts to Improve Student Learning Outcomes in Islamic Education Learning by Implementing the Discovery Learning Model at SMA Negeri 1 Kluet Tengah

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Abstract: This study aims to improve students' learning outcomes in Islamic Education through the implementation of the Discovery Learning model at SMA Negeri 1 Kluet Tengah. The research employed Classroom Action Research (CAR) consisting of two cycles, with each cycle including planning, action, observation, and reflection stages. The participants were 32 eleventh-grade students. Data were collected through achievement tests, observation sheets, and documentation. Quantitative data were analyzed using descriptive statistics to measure the improvement of students' cognitive learning outcomes, while qualitative data were analyzed to examine changes in student engagement and participation during the learning process. The findings indicate a significant improvement in students' learning outcomes after the implementation of the Discovery Learning model. In the pre-cycle stage, only 46.88% of students achieved the minimum mastery criterion (MMC) with a mean score of 68.75. In Cycle I, mastery increased to 71.88% with a mean score of 76.34. The improvement became more substantial in Cycle II, where 90.63% of students met the MMC with a mean score of 84.21. Observational data also showed enhanced student engagement, critical thinking, and collaborative participation during learning activities. The results demonstrate that the Discovery Learning model effectively fosters active learning, conceptual understanding, and higher-order thinking skills in Islamic Education. This study contributes empirically to the growing body of research supporting student-centered pedagogical approaches in Islamic Education at the secondary school level. It is recommended that Islamic Education teachers integrate Discovery Learning strategies systematically to enhance both cognitive achievement and student engagement.

Keywords: Discovery Learning, Islamic Education, Student Learning Outcomes.

INTRODUCTION

Education plays a pivotal role in shaping students' intellectual, moral, and spiritual development, particularly in the context of Islamic Education. As a subject that integrates cognitive, affective, and psychomotor dimensions, Islamic Education is expected not only to transmit religious knowledge but also to cultivate ethical awareness and reflective thinking. Contemporary educational discourse emphasizes that effective learning occurs when students actively construct meaning rather than passively receive information (Bruner,

1961; Vygotsky, 1978). Within this framework, the transformation of Islamic Education pedagogy from teacher-centered to student-centered approaches becomes increasingly urgent.

In many Indonesian secondary schools, including SMA Negeri 1 Kluet Tengah, Islamic Education learning remains dominated by conventional lecture-based methods. Such approaches often limit opportunities for inquiry, discussion, and critical engagement. Research consistently shows that traditional expository instruction tends to produce surface learning and low retention rates (Prince, 2004; Hattie, 2009). As a result, students' learning outcomes frequently fall below the expected minimum mastery criteria, particularly in topics requiring analytical and reflective understanding of Islamic teachings.

Learning outcomes in Islamic Education encompass not only factual comprehension but also the ability to interpret, analyze, and apply religious principles in daily life. According to Bloom's revised taxonomy, meaningful learning requires the development of higher-order thinking skills, including analysis, evaluation, and creation (Anderson & Krathwohl, 2001). However, empirical observations indicate that students often demonstrate limited engagement in higher-level cognitive processes during Islamic Education lessons. This situation necessitates innovative pedagogical interventions that promote active discovery and conceptual understanding.

Discovery Learning, originally proposed by Jerome Bruner, is grounded in constructivist theory, which posits that knowledge is best acquired when learners actively explore and discover principles independently (Bruner, 1961). In this model, the teacher functions as a facilitator who structures learning experiences to guide students toward conceptual insights. Discovery Learning encourages inquiry, hypothesis formulation, experimentation, and reflective dialogue, all of which align with the epistemological foundations of Islamic intellectual tradition that value reasoning and contemplation.

The theoretical underpinnings of Discovery Learning are closely connected to constructivism, which asserts that learners build knowledge through interaction with their environment and social context (Piaget, 1970; Vygotsky, 1978). Constructivist pedagogy fosters deeper understanding by engaging students in problem-solving and collaborative learning processes (Slavin, 2018). In Islamic Education, such an approach is particularly relevant because religious understanding often requires interpretative reasoning and contextual reflection.

Previous studies have demonstrated that Discovery Learning can significantly enhance students' academic achievement across various disciplines. Empirical findings reveal improvements in critical thinking, conceptual mastery, and student motivation when Discovery Learning strategies are implemented systematically (Hmelo-Silver, Duncan, & Chinn, 2007; Mayer, 2004). In the context of religious education, inquiry-based approaches have been shown to strengthen students' engagement and internalization of values (Halstead, 2004; Sahin, 2013). Nevertheless, research specifically examining the application of Discovery Learning in Islamic Education at the senior high school level remains limited.

Islamic Education in Indonesia operates within a national curriculum framework that emphasizes competence-based learning and character formation. The integration of scientific approaches in religious subjects is encouraged to ensure alignment with 21st-century educational standards. The 21st-century skills framework underscores the importance of critical thinking, collaboration, communication, and creativity (Trilling & Fadel, 2009). Discovery Learning provides a pedagogical structure capable of nurturing these competencies while maintaining fidelity to Islamic values.

Despite its theoretical strengths, the practical implementation of Discovery Learning in Islamic Education presents several challenges. Teachers often encounter difficulties in designing inquiry-oriented lesson plans and managing classroom dynamics during exploratory activities. Effective professional competence is essential to facilitate meaningful discovery processes (Shulman, 1986). Without adequate scaffolding, students may experience cognitive overload or misconceptions (Kirschner, Sweller, & Clark, 2006).

Therefore, systematic planning and reflective evaluation are necessary to optimize the model's effectiveness.

Classroom Action Research offers a strategic methodological framework to address instructional challenges in real educational settings. According to Stephen Kemmis and Robin McTaggart (1988), Classroom Action Research involves iterative cycles of planning, acting, observing, and reflecting to improve teaching practice. This approach allows educators to diagnose learning problems and implement targeted interventions while continuously refining pedagogical strategies. In the context of this study, Classroom Action Research serves as an appropriate design to evaluate the impact of Discovery Learning on students' learning outcomes.

The urgency of improving learning outcomes in Islamic Education is further reinforced by national and global educational accountability standards. Student achievement data often serve as indicators of instructional quality and institutional performance (OECD, 2019). However, quantitative achievement must be interpreted alongside qualitative indicators of engagement and moral development. Discovery Learning potentially bridges these dimensions by integrating cognitive rigor with reflective understanding.

Several empirical investigations have reported positive correlations between student-centered learning models and academic performance. Meta-analytical evidence indicates that active learning strategies significantly outperform traditional lecturing in promoting conceptual understanding (Freeman et al., 2014). In religious education contexts, dialogical and inquiry-based approaches enhance students' moral reasoning and personal reflection (Jackson, 2014). These findings suggest that Discovery Learning may offer a viable pathway to reform Islamic Education pedagogy.

Moreover, the philosophical foundations of Islamic pedagogy historically emphasize inquiry and intellectual exploration. Classical Muslim scholars encouraged critical engagement with knowledge and reflective reasoning. Integrating Discovery Learning into contemporary Islamic Education may therefore be viewed not as a foreign innovation but as a revitalization of an authentic intellectual tradition. Such alignment strengthens the cultural and theological relevance of constructivist approaches within Islamic schooling.

However, gaps remain in empirical evidence concerning the measurable impact of Discovery Learning on students' mastery of Islamic Education content in Indonesian senior high schools. Many studies focus on science or mathematics education, leaving religious subjects underrepresented in scholarly discourse. Addressing this gap contributes to a more balanced understanding of pedagogical innovation across disciplines.

Another important dimension relates to student motivation. Self-determination theory posits that autonomy-supportive environments enhance intrinsic motivation and academic engagement (Deci & Ryan, 2000). Discovery Learning fosters autonomy by allowing students to explore questions and construct conclusions. In Islamic Education, such autonomy can deepen personal conviction and internalization of values rather than mere rote memorization.

The integration of collaborative inquiry also supports social constructivist learning processes. Interaction and dialogue enable students to negotiate meaning and refine their understanding (Johnson & Johnson, 2009). Islamic Education classes provide fertile ground for such collaborative engagement, particularly when discussing ethical dilemmas or contextual applications of religious teachings.

Nevertheless, pedagogical transformation requires empirical validation within specific institutional contexts. Each school environment presents unique socio-cultural characteristics that influence instructional effectiveness. Therefore, investigating the implementation of Discovery Learning at SMA Negeri 1 Kluet Tengah offers context-specific insights that enrich broader theoretical discussions.

The present study seeks to examine whether the implementation of the Discovery Learning model can improve students' learning outcomes in Islamic Education. Improvement is measured through cognitive achievement scores and supported by

observational data reflecting increased participation and engagement. By employing Classroom Action Research, the study systematically evaluates changes across iterative cycles to ensure methodological rigor and reflective refinement.

This research contributes to the scholarly literature by providing empirical evidence from a senior high school context in Indonesia, thereby extending the applicability of constructivist pedagogy within Islamic Education. It also offers practical implications for teachers seeking innovative strategies to enhance both academic achievement and meaningful understanding of religious principles.

The need to enhance Islamic Education learning outcomes demands pedagogical approaches that align with contemporary educational theory while respecting Islamic intellectual traditions. Discovery Learning represents a theoretically grounded and practically promising model to address existing instructional challenges. Through systematic Classroom Action Research, this study aims to demonstrate the effectiveness of this approach in fostering improved learning outcomes, deeper conceptual understanding, and more active student engagement in Islamic Education learning.

METHODS

This study employed Classroom Action Research as the primary research design to improve students' learning outcomes in Islamic Education through the implementation of the Discovery Learning model. Classroom Action Research is characterized by a cyclical process involving planning, action, observation, and reflection, enabling systematic improvement of instructional practices (Kemmis & McTaggart, 1988; Burns, 2010). The selection of this design was grounded in its practical orientation toward solving authentic classroom problems while simultaneously generating scholarly knowledge. Through iterative cycles, the researcher was able to evaluate instructional effectiveness and refine pedagogical strategies based on empirical evidence.

The research was conducted at SMA Negeri 1 Kluet Tengah during the 2025/2026 academic year. The participants consisted of 32 eleventh-grade students enrolled in Islamic Education classes. The class was selected purposively based on preliminary observations indicating that students' learning outcomes in Islamic Education were below the established Minimum Mastery Criterion (MMC). The demographic composition of the class reflected a heterogeneous academic background, allowing for comprehensive analysis of instructional impact across varying ability levels.

The study was implemented in two cycles, with each cycle comprising four stages: planning, action, observation, and reflection. In the planning stage, lesson plans were developed in accordance with the Discovery Learning syntax, including stimulation, problem identification, data collection, data processing, verification, and generalization (Bruner, 1961). Instructional materials, student worksheets, and assessment instruments were designed to align with competency standards outlined in the national curriculum for Islamic Education.

During the action stage, the Discovery Learning model was systematically implemented in classroom instruction. The teacher initiated learning through contextual problem scenarios related to Islamic teachings, encouraging students to formulate questions and hypotheses. Students engaged in group discussions, textual analysis of Qur'anic verses and Hadith, and reflective interpretation activities. The teacher functioned as a facilitator, providing scaffolding when necessary to prevent misconceptions while maintaining student autonomy. This approach is consistent with constructivist principles that emphasize guided inquiry rather than direct transmission of knowledge (Hmelo-Silver et al., 2007).

Observation was conducted concurrently with the implementation process. Data were collected using structured observation sheets designed to measure student engagement, participation, collaboration, and critical thinking behaviors. Two observers were involved to enhance objectivity and minimize bias. Inter-observer agreement was

discussed following each session to ensure consistency in rating procedures. Qualitative field notes were also recorded to capture contextual classroom dynamics that could not be quantified through structured instruments.

Reflection constituted the final stage of each cycle. Quantitative and qualitative data were analyzed to evaluate the effectiveness of the instructional intervention. Identified weaknesses in Cycle I, such as uneven group participation and time management constraints, were addressed through instructional adjustments in Cycle II. This iterative reflective process aligns with the core principles of Classroom Action Research, which emphasize continuous improvement through evidence-based decision-making (Stringer, 2014).

Data collection techniques consisted of achievement tests, observation sheets, and documentation. Achievement tests were administered at the end of each cycle to measure students' cognitive learning outcomes. The test items were constructed based on indicators derived from Bloom's revised taxonomy, encompassing levels of understanding, application, analysis, and evaluation (Anderson & Krathwohl, 2001). Content validity was established through expert judgment involving two senior Islamic Education educators. Reliability analysis using Cronbach's alpha indicated a satisfactory internal consistency coefficient above 0.70, meeting accepted psychometric standards (Creswell, 2014).

Quantitative data were analyzed using descriptive statistical techniques, including mean scores, percentage of mastery learning, and improvement rates between cycles. The level of learning mastery was determined based on the Minimum Mastery Criterion established by the school. Improvement in learning outcomes was interpreted by comparing pre-cycle, Cycle I, and Cycle II results.

Qualitative data obtained from observation sheets and field notes were analyzed using thematic analysis. Data reduction, data display, and conclusion drawing were conducted systematically to identify patterns of behavioral change and student engagement (Miles, Huberman, & Saldaña, 2014). Triangulation of data sources was applied to enhance credibility and ensure consistency between quantitative achievement results and qualitative classroom observations.

Ethical considerations were carefully observed throughout the research process. Permission was obtained from the school administration prior to data collection. Students were informed about the purpose of the study, and confidentiality of individual performance data was strictly maintained. Participation did not disadvantage any student academically, as all instructional interventions were aligned with curricular objectives.

To ensure methodological rigor, the study adhered to criteria of validity, reliability, and trustworthiness. Construct validity was strengthened through alignment between theoretical constructs of Discovery Learning and operational indicators used in assessment instruments. Internal validity was supported by the cyclical design of Classroom Action Research, allowing continuous refinement and verification of findings. Reliability was enhanced through standardized testing procedures and consistent observation protocols. Through this systematic methodological framework, the study aimed to generate robust empirical evidence regarding the effectiveness of the Discovery Learning model in improving students' learning outcomes in Islamic Education at the senior high school level.

RESULTS

This study aimed to improve students' learning outcomes in Islamic Education through the implementation of the Discovery Learning model at SMA Negeri 1 Kluet Tengah. The findings are presented quantitatively based on pre-cycle, Cycle I, and Cycle II achievement test results, and qualitatively based on classroom observations.

The quantitative results indicate a consistent and significant improvement in students' cognitive achievement across the two action cycles. The improvement can be observed in terms of mean score, percentage of students achieving the Minimum Mastery Criterion (MMC), and the reduction in the number of students who did not meet mastery

standards. Table 1 presents a comprehensive comparison of students' learning outcomes across the three stages of the study.

Table 1. Improvement of Students' Learning Outcomes Across Research Cycles

Stage	Mean Score	Students Achieving MMC (n)	Mastery Percentage (%)	Students Not Achieving MMC (n)
Pre-Cycle	68.75	15	46.88	17
Cycle I	76.34	23	71.88	9
Cycle II	84.21	29	90.63	3

As shown in Table 1, the pre-cycle data reveal that only 15 out of 32 students (46.88%) achieved the MMC, with a mean score of 68.75. The majority of students (53.12%) did not meet the expected standard, indicating that conventional instructional approaches were insufficient to facilitate optimal conceptual understanding.

After implementing the Discovery Learning model in Cycle I, there was a notable improvement in students' achievement. The mean score increased to 76.34, and 23 students (71.88%) achieved the MMC. This represents an increase of 25 percentage points in mastery level compared to the pre-cycle stage. Although the target of 85% classical mastery had not yet been achieved, the data demonstrated substantial progress.

Further refinement of instructional strategies in Cycle II produced more significant gains. The mean score rose to 84.21, and 29 students (90.63%) met the MMC. Only three students remained below the mastery criterion. The classical mastery target was therefore exceeded in Cycle II, indicating that the intervention successfully improved overall learning outcomes.

In addition to quantitative improvements, qualitative observational data revealed marked changes in classroom engagement. During the pre-cycle phase, students tended to be passive, relying heavily on teacher explanations. In Cycle I, students began actively participating in group discussions, although some groups still required structured guidance. By Cycle II, classroom dynamics showed substantial transformation: students independently formulated questions, analyzed Qur'anic verses and Hadith contextually, and engaged in reflective dialogue with minimal teacher prompting.

Observation scores of student engagement increased progressively across cycles. Indicators such as collaborative participation, questioning behavior, analytical reasoning, and presentation skills demonstrated consistent improvement. These qualitative findings corroborate the quantitative achievement data, suggesting that the Discovery Learning model not only enhanced test performance but also fostered deeper cognitive engagement. Overall, the results confirm that the implementation of the Discovery Learning model significantly improved students' learning outcomes in Islamic Education, both in terms of academic achievement and active participation.

DISCUSSION

The findings of this study demonstrate that the Discovery Learning model effectively improved students' learning outcomes in Islamic Education. The progressive increase in mean scores and mastery percentages from pre-cycle to Cycle II confirms the positive impact of student-centered instructional strategies. These results are consistent with constructivist theory, which posits that knowledge is constructed actively through exploration and interaction (Bruner, 1961; Piaget, 1970).

The substantial increase in mastery from 46.88% in the pre-cycle to 90.63% in Cycle II indicates that the shift from teacher-centered instruction to guided discovery significantly enhanced conceptual understanding. According to Anderson and Krathwohl (2001), higher-order cognitive processes develop when learners are engaged in analysis, evaluation, and

synthesis activities. The Discovery Learning stages implemented in this study required students to identify problems, gather information, verify findings, and formulate generalizations, thereby activating these higher-level cognitive domains.

The observed increase in student engagement aligns with social constructivist perspectives emphasizing collaborative knowledge construction (Vygotsky, 1978). Through group discussions and inquiry-based tasks, students were encouraged to articulate reasoning, negotiate meaning, and reflect critically on Islamic teachings. Such interaction enhances cognitive restructuring and deepens understanding (Slavin, 2018).

The improvement between Cycle I and Cycle II highlights the importance of reflective refinement in Classroom Action Research. As proposed by Kemmis and McTaggart (1988), iterative cycles enable educators to identify instructional weaknesses and implement corrective strategies. Adjustments made in Cycle II, including clearer scaffolding and more structured inquiry prompts, reduced cognitive overload and enhanced conceptual clarity. This finding addresses concerns raised by Kirschner, Sweller, and Clark (2006), who argue that minimally guided instruction may be ineffective without proper scaffolding.

The results also support empirical evidence demonstrating the superiority of active learning over traditional lecturing. Freeman et al. (2014) found that active learning significantly improves student performance across disciplines. Similarly, Hattie (2009) emphasizes that instructional strategies promoting visible learning and feedback yield higher achievement gains. In this study, continuous feedback and guided inquiry were integral components of the Discovery Learning process.

From a motivational perspective, the increase in student participation can be explained through self-determination theory, which emphasizes the role of autonomy in fostering intrinsic motivation (Deci & Ryan, 2000). By allowing students to explore religious concepts independently and collaboratively, the instructional approach supported autonomy and competence, thereby enhancing engagement and persistence.

In the context of Islamic Education, the findings carry additional pedagogical significance. Inquiry and reflection are deeply rooted in Islamic intellectual tradition, which encourages contemplation and reasoning. The integration of Discovery Learning therefore aligns pedagogical practice with epistemological principles intrinsic to Islamic scholarship. This alignment likely contributed to students' increased meaningful engagement with religious texts and ethical discussions.

Furthermore, the results demonstrate that Discovery Learning not only improves cognitive outcomes but also fosters critical and reflective thinking. Such competencies are essential within 21st-century education frameworks, which emphasize analytical and collaborative skills (Trilling & Fadel, 2009). The improvement observed in students' presentation and reasoning abilities during Cycle II reflects this broader competency development.

Although the findings are promising, the success of Discovery Learning depends heavily on teacher competence in designing inquiry-based activities and managing classroom dynamics. As highlighted by Shulman (1986), pedagogical content knowledge is crucial for effective instruction. The reflective component of Classroom Action Research allowed the teacher to progressively enhance instructional quality, thereby maximizing the model's effectiveness.

The findings provide robust empirical evidence that implementing the Discovery Learning model in Islamic Education significantly enhances student learning outcomes, engagement, and higher-order thinking skills. The integration of constructivist pedagogy within Islamic Education at the senior high school level proves both theoretically sound and practically effective. These results contribute meaningfully to the ongoing discourse on innovative pedagogical reform in religious education contexts and reinforce the importance of student-centered learning models in achieving sustainable academic improvement.

CONCLUSION

This Classroom Action Research conducted at SMA Negeri 1 Kluet Tengah demonstrates that the systematic implementation of the Discovery Learning model significantly improves students' learning outcomes in Islamic Education. The progressive increase in mean scores from 68.75 in the pre-cycle to 84.21 in Cycle II, alongside the rise in classical mastery from 46.88% to 90.63%, provides strong empirical evidence of the model's effectiveness in enhancing cognitive achievement. Beyond quantitative gains, qualitative findings reveal meaningful improvements in student engagement, critical thinking, collaborative interaction, and reflective understanding of Islamic teachings. The iterative cycles of planning, action, observation, and reflection enabled continuous pedagogical refinement, ensuring that instructional adjustments addressed identified learning barriers. These findings affirm that Discovery Learning, when implemented with appropriate scaffolding and reflective evaluation, offers a pedagogically robust and contextually relevant approach for strengthening Islamic Education at the senior high school level. The study contributes theoretically to the constructivist discourse in religious education and practically to the development of student-centered instructional strategies capable of fostering both academic excellence and meaningful religious understanding.

REFERENCES

Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. Longman.

Bloom, B. S. (1956). *Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain*. David McKay.

Bruner, J. S. (1961). The act of discovery. *Harvard Educational Review, 31*(1), 21–32.

Burns, A. (2010). *Doing action research in English language teaching: A guide for practitioners*. Routledge.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Sage Publications.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Freeman, S., Eddy, S. L., McDonough, M., Smith, M. K., Okoroafor, N., Jordt, H., & Wenderoth, M. P. (2014). Active learning increases student performance in science, engineering, and mathematics. *Proceedings of the National Academy of Sciences, 111*(23), 8410–8415. https://doi.org/10.1073/pnas.1319030111

Halstead, J. M. (2004). An Islamic concept of education. *Comparative Education, 40*(4), 517–529. https://doi.org/10.1080/0305006042000284510

Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Routledge.

Hmelo-Silver, C. E., Duncan, R. G., & Chinn, C. A. (2007). Scaffolding and achievement in problem-based and inquiry learning: A response to Kirschner, Sweller, and Clark. *Educational Psychologist, 42*(2), 99–107. https://doi.org/10.1080/00461520701263368

Jackson, R. (2014). *Signposts: Policy and practice for teaching about religions and non-religious worldviews in intercultural education*. Council of Europe Publishing.

Johnson, D. W., & Johnson, R. T. (2009). *An educational psychology success story: Social interdependence theory and cooperative learning*. Educational Researcher, 38(5), 365–379.

Kemmis, S., & McTaggart, R. (1988). *The action research planner* (3rd ed.). Deakin University Press.

Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist, 41*(2), 75–86. https://doi.org/10.1207/s15326985ep4102_1

Mayer, R. E. (2004). Should there be a three-strikes rule against pure discovery learning? *American Psychologist, 59*(1), 14–19. https://doi.org/10.1037/0003-066X.59.1.14

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Sage Publications.

OECD. (2019). *PISA 2018 results (Volume I): What students know and can do*. OECD Publishing. https://doi.org/10.1787/5f07c754-en

Piaget, J. (1970). *Science of education and the psychology of the child*. Orion Press.

Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education, 93*(3), 223–231. https://doi.org/10.1002/j.2168-9830.2004.tb00809.x

Sahin, A. (2013). *New directions in Islamic education: Pedagogy and identity formation*. Kube Publishing.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher, 15*(2), 4–14.

Slavin, R. E. (2018). *Educational psychology: Theory and practice* (12th ed.). Pearson.

Stringer, E. T. (2014). *Action research* (4th ed.). Sage Publications.

Trilling, B., & Fadel, C. (2009). *21st century skills: Learning for life in our times*. Jossey-Bass.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.