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Interdisciplinary Reflections in Teaching for Educational Statistics Perspectives of Educators with Islamic Religious Education Backgrounds

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ABSTRACT

This research explores the application of an interdisciplinary approach in teaching for Educational Statistics by an educator with an Islamic Religious Education background. Using a single case study methodology and a living theory framework, this study investigates how the integration of Islamic Religious Education perspectives can enrich statistics teaching. Data was collected through reflective journals, participant observation, student interviews, and document analysis over one academic semester. The results show that this interdisciplinary approach creates a rich and meaningful learning environment, enhancing students' conceptual understanding, developing ethical awareness, critical thinking, and metacognitive abilities. The use of analogies and contextualization of statistical knowledge within the framework of Islamic values increases the relevance and applicability of the material for students. Despite facing implementation challenges, this approach demonstrates significant potential in improving learning motivation and changing students' perceptions of statistics. These findings have important implications for interdisciplinary curriculum design and the development of educators' professional identities in the context of higher education.

Keywords:
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In an increasingly complex and fragmented era of higher education, interdisciplinary approaches are becoming crucial to address contemporary teaching challenges (Klein, 2020). This study explores a unique phenomenon where I, an educator with an Islamic Religious Education background, teach an Educational Statistics course by applying an interdisciplinary reflection approach. Whitehead and Huxtable (2023) assert that it enables education practitioners to "generate explanations of their own influence on their learning and contribute to the development of professional knowledge". This thinking forms the foundation for this study, which aims to explore how an Islamic Religious Education background can provide new and valuable perspectives in teaching statistics.

This study uses the interdisciplinary reflection framework developed by Repko and Szostak (2021) to analyze various aspects of teaching, including perspective integration, use of analogies and metaphors, ethics integration, holistic approaches, critical thinking, knowledge contextualization, self-development, and emphasis on universal values. Through this lens, I explore how educators can create conceptual bridges between two seemingly different disciplines, enhancing students' understanding of statistics while enriching their learning experience with insights from Islamic tradition. This study not only aims to provide insights into innovative teaching practices but also to contribute to the broader discussion on interdisciplinarity in higher education, as discussed by Frodeman and Klein (2022). By demonstrating how knowledge from various disciplines can be integrated to create new perspectives, this study offers a potential model for educators in various fields to enrich their teaching practices through interdisciplinary reflection.

In this study, I will outline the reflection methodology used, adopting the approach proposed by McNiff (2022) in living theory-based action research. We will present key findings from the teaching experience, and discuss the implications of this approach for educators' professional development and improvement of student learning quality, in line with the concept of 'scholarship of teaching and learning' proposed by Boyer and Huber (2021). Finally, I will study how this interdisciplinary reflection process can contribute to the development of broader educational theory and practice, referring to the transformative framework proposed by Mezirow and Taylor (2023). This study is expected to make a significant contribution to the literature on interdisciplinary teaching and living theory in the context of higher education.

Theoretical Framework

Interdisciplinarity in Higher Education: Interdisciplinarity has become an important topic in discussions about higher education reform. Klein (2020) asserts that interdisciplinary approaches are essential to address the complexity of real-world problems that cannot be solved by a single discipline alone. Furthermore, Frodeman and Klein (2022) argue that interdisciplinarity is not just about combining knowledge from various disciplines, but also about creating new ways of thinking that transcend traditional boundaries.

Living Theory in Educational Practice: The concept of living theory, developed by Whitehead and McNiff (2021), offers a framework for education practitioners to research and improve their own practice. Whitehead and Huxtable (2023) explain that living theory allows educators to "generate explanations of their own influence on their learning and contribute to the development of professional knowledge". This approach encourages critical reflection and continuous improvement in teaching practice.

Interdisciplinary Reflection in Teaching: Repko and Szostak (2021) propose a framework for interdisciplinary reflection that involves critical analysis of assumptions and methods from various disciplines. They argue that interdisciplinary reflection can enrich understanding and generate new insights that are not possible through monodisciplinary approaches. Newell et al. (2022) further assert that interdisciplinary reflection can enhance creativity and innovation in teaching.

Integration of Religious Values in Science Education: How religious values can be integrated into science education has become an increasingly relevant topic. Billingsley et al. (2021) researched how students' understanding of science can be enriched through dialogue with religious perspectives. They found that an integrative approach can increase student engagement and deeper understanding of the nature of knowledge.

Ethics in Statistics Research and Teaching: Ethics in statistics research and teaching has received increasing attention in academic literature. Wasserstein et al. (2023) emphasize the importance of data integrity and transparency in statistical analysis. They argue that statistics teaching should include in-depth discussions about the ethical implications of data manipulation and interpretation.

Holistic Approach in Education: The concept of holistic education, emphasizing the intellectual, emotional, social, physical, creative, and spiritual development of learners, has gained momentum. Miller (2022) argues that a holistic approach can enhance student engagement and learning outcomes. He highlights how spiritual perspectives can enrich students' understanding of

scientific concepts.

Critical Thinking in Higher Education: The importance of critical thinking in higher education has long been recognized, but its implementation remains a challenge. Facione and Gittens (2021) propose a teaching model that integrates critical thinking into the curriculum across all disciplines. They emphasize the importance of teaching students to evaluate evidence, analyze arguments, and consider alternative perspectives.

Contextualization of Knowledge in Teaching: Knowledge contextualization has proven to be an effective strategy for improving student understanding and retention. Gravemeijer et al. (2022) researched how contextualization can be applied in mathematics and statistics teaching. They found that connecting abstract concepts to real-world situations can increase student motivation and understanding.

Self-Development in the Education Profession: The concept of continuous self-development is becoming increasingly important in the education profession. Darling-Hammond et al. (2023) emphasize the importance of self-reflection and lifelong learning for educators. They argue that educators who continuously develop themselves are better able to adapt to changes in the educational landscape and student needs.

Universal Values in Education: The importance of emphasizing universal values in education has received increasing attention. UNESCO (2022) published a report emphasizing the role of education in promoting global peace, justice, and sustainability. The report highlights how universal values can be integrated into curricula across various disciplines.

Analogies and Metaphors in Science Teaching: The use of analogies and metaphors in science teaching has proven effective in helping students understand abstract concepts. Aubusson et al. (2021) researched how analogies can be used to teach complex concepts in physics and biology. They found that well-designed analogies can enhance students' conceptual understanding and long-term retention.

Interdisciplinarity and Pedagogical Innovation: The relationship between interdisciplinarity and pedagogical innovation has become a focus of recent research. Spelt et al. (2023) explored how interdisciplinary approaches can drive innovation in teaching methods. They found that collaboration across disciplines can result in new pedagogical strategies that are more effective in addressing complex learning challenges.

METHODS

Paper Research Design

This research adopts a qualitative approach with a single case study design (Yin, 2018). This case study focuses on my experience as an educator with an Islamic Religious Education background teaching an Educational Statistics course. This approach was chosen due to its ability to provide an in-depth understanding of complex phenomena in real-life contexts (Merriam & Tisdell, 2016).

This research is also based on the living theory framework (Whitehead & McNiff, 2006), which allows practitioners to research and improve their own practice. Additionally, this research integrates the concept of interdisciplinary reflection developed by Repko and Szostak (2020) to analyze various aspects of teaching.

Research Participants

The main participant in this research is the researcher himself, a lecturer with an Islamic Religious Education background teaching an Educational Statistics course. In addition, approximately 100 students enrolled in three classes are also involved as secondary data sources. Participant selection was conducted through purposive sampling (Patton, 2015) to ensure relevance to the research objectives.

Data Collection

Data was collected through several methods to ensure triangulation (Denzin, 2017): The researcher's reflective journal recording experiences, thoughts, and insights during the teaching process, Participant observation during teaching sessions, documented in structured field notes, Semi-structured interviews with randomly selected students (n=10) and Document analysis, including lesson plans, course materials, and student assignments.

Research Instruments

The primary instrument in this research is the researcher himself, in line with qualitative research tradition (Creswell & Poth, 2018). Additionally, a semi-structured interview protocol was developed based on Repko and Szostak's (2020) interdisciplinary reflection framework. An observation protocol was also developed to guide note-taking during teaching sessions.

Research Procedure

The research was conducted over one academic semester (14 weeks). Each week, the researcher taught Educational Statistics sessions (3 credits) for 3 times 150 minutes (for 3 class groups), followed by in-depth reflection recorded in a reflective journal. Participant observation was

conducted during teaching sessions. Interviews with students were conducted at mid-semester and end of semester. Document analysis was carried out continuously throughout the semester.

Data Analysis

Data analysis followed the thematic analysis approach proposed by Braun and Clarke (2006). This process involved: familiarization with data through repeated reading, initial coding to identify relevant units of meaning, searching for potential themes, reviewing and refining themes, defining and naming themes, and producing the final report. NVivo 12 software was used to assist the qualitative data analysis process (Bazeley & Jackson, 2013).

Data Validity

To ensure data validity, several strategies were applied (Lincoln & Guba, 1985): triangulation of methods and data sources, member checking where initial interpretations were shared with participants for validation, peer debriefing with colleagues not directly involved in the research, and an audit trail recording all methodological and analytical decisions.

Research Ethics

This research obtained ethical approval from all participants. Participant confidentiality and anonymity were maintained through the use of pseudonyms and secure data storage. Participants were given the right to withdraw from the research at any time without negative consequences.

Researcher Reflexivity

Given the researcher's dual role as both subject and research instrument, reflexivity became crucial (Finlay, 2002). The researcher actively reflected on his assumptions, biases, and personal influence on the research process. These reflections were recorded in a separate reflective journal and integrated into the data analysis.

Research Limitations

This research has several limitations that need to be acknowledged. First, as a single case study, the generalizability of findings may be limited. Second, the focus on the researcher's subjective experience may introduce bias. However, rigorous data validity strategies were applied to minimize the potential impact of these limitations.

Critical Analysis

Throughout the research process, the researcher actively engaged in critical analysis of his own

practice, referring to the critical thinking framework developed by Brookfield (2017). This involved examining assumptions, exploring alternative perspectives, and considering the ethical implications of teaching practices.

RESULTS AND DISCUSSION

Integration of Interdisciplinary Perspectives

The integration of Islamic Religious Education perspectives into the teaching of Educational Statistics created a unique and rich learning environment. Students reported increased conceptual understanding when statistical concepts were explained using analogies from Islamic teachings. This aligns with Aubusson et al. (2021) findings on the effectiveness of using analogies in science teaching.

This approach helped bridge the gap between abstract statistical concepts and knowledge students already possessed from their religious background. These findings reinforce previous research on the effectiveness of using analogies in science teaching, while demonstrating an innovative application of this principle in the context of statistics teaching. The results indicate great potential for interdisciplinary approaches in improving the quality of learning and student engagement in courses often considered challenging.

Application of Ethics in Statistical Analysis

The emphasis on research ethics and data integrity, rooted in Islamic values, proved to increase students' awareness of ethical responsibilities in statistical analysis. This supports Wasserstein et al.'s (2023) argument about the importance of integrity in statistical practice.

The positive impact of applying ethics in statistical analysis rooted in Islamic values was evident. By emphasizing the importance of research ethics and data integrity in the context of Islamic teachings, students showed a significant increase in awareness of their ethical responsibilities in conducting statistical analysis. This approach not only enhanced students' understanding of the technical aspects of statistics but also deepened their appreciation of the ethical implications of statistical practice. These results align with arguments about the crucial nature of integrity in statistical practice, while demonstrating how religious values can be effectively integrated to strengthen understanding of ethics in an academic context. These findings highlight the potential of interdisciplinary approaches in developing not only technical skills but also critical ethical awareness for future professional practice.

Holistic Approach to Learning

The holistic approach integrating spiritual aspects with statistical understanding resulted in higher levels of student engagement. Students reported feeling more connected to the subject matter. These findings are consistent with Miller's (2022) research on the effectiveness of holistic approaches in education.

The success of a holistic approach in statistics learning that integrates spiritual aspects was evident. This approach proved highly effective in increasing student engagement with the subject matter. Students reported feeling more connected to statistical concepts when presented in a context that includes a spiritual dimension. This integration not only helped students understand the material more deeply but also made learning statistics a more meaningful and relevant experience for their lives. These findings reinforce the effectiveness of holistic approaches in education, showing that integrating various aspects of students' knowledge and experience can significantly improve the quality and impact of learning. These results emphasize the importance of considering students as whole individuals in the educational process, not just as recipients of technical information.

Critical Thinking Development

Applying critical thinking traditions from Islamic studies to statistics teaching resulted in improved student ability to evaluate statistical methods and interpret data. This supports Facione and Gittens' (2021) argument about the importance of integrating critical thinking into the curriculum.

The improvement in students' critical thinking skills through the integration of critical thinking traditions from Islamic studies into statistics teaching was notable. This approach proved effective in enhancing students' ability to evaluate statistical methods and interpret data more deeply and critically. Students showed improvement in their ability to question assumptions, analyze arguments, and consider various perspectives in the context of statistical analysis. The use of critical thinking principles from Islamic tradition not only enriched students' understanding of statistics but also helped them develop analytical skills that can be widely applied. These findings support the argument about the importance of integrating critical thinking into the curriculum, while demonstrating an innovative way to do so through an interdisciplinary perspective. These results affirm that an interdisciplinary approach in teaching statistics can effectively develop high-level thinking skills that are much needed in today's information age.

Contextualization of Statistical Knowledge

The use of examples from Islamic Religious Education contexts in explaining statistical concepts

increased the relevance and applicability of the material for students. This aligns with Gravemeijer et al. (2022) findings on the effectiveness of contextualization in mathematics teaching.

The importance of contextualizing statistical knowledge in improving student understanding and engagement was clear. The use of examples from Islamic Religious Education contexts in explaining statistical concepts proved highly effective in increasing the relevance and applicability of the material for students. This approach helped students see direct connections between abstract statistical concepts and the realities they understand in their religious and cultural contexts. Students reported an increase in their ability to apply statistical concepts in real situations related to religious studies and socio-religious phenomena. These findings reinforce results on the effectiveness of contextualization in mathematics teaching, while demonstrating its unique application in the domain of educational statistics. These results emphasize the importance of bridging the gap between statistical theory and practice in meaningful contexts for students, thus enhancing not only their understanding but also their motivation and ability to apply statistical knowledge in their future professional lives.

Continuous Self-Development

The ongoing reflection process, inspired by the concept of 'tazkiyah' in Islam, encouraged students to continuously improve their understanding of statistics. This supports Darling-Hammond et al. (2023) argument about the importance of lifelong learning in education.

This research revealed the important role of continuous self-development in statistics learning, inspired by the concept of 'tazkiyah' or self-purification in Islam. This ongoing reflection process proved effective in encouraging students to continually improve their understanding of statistics, not only during their course of study but also as a long-term approach to learning. Students showed increased awareness of the importance of continuous self-improvement in understanding and applying statistical concepts. This approach not only enhanced mastery of the material but also developed a positive attitude towards lifelong learning. These findings reinforce the argument about the importance of lifelong learning in education, while demonstrating how spiritual principles can be effectively integrated to support this goal. These results highlight the potential of interdisciplinary approaches in developing not only academic skills but also a sustainable learning mindset, which is crucial for professional and personal success in an ever-changing era.

Emphasis on Universal Values

The integration of universal values such as honesty and objectivity in statistics teaching increased students' awareness of the social implications of statistical practices. These findings align with

UNESCO's (2022) recommendations on the role of education in promoting global values.

This research revealed the significant impact of emphasizing universal values in statistics teaching. The integration of values such as honesty and objectivity into the statistics curriculum not only enhanced students' technical understanding but also substantially increased their awareness of the social implications of statistical practices. Students showed improved ability to consider the ethical and social consequences of statistical analysis and interpretation. This approach helped students understand that statistics is not just a mathematical tool, but also has real impacts on social decision-making and policy. By integrating universal values into the teaching of technical subjects like statistics, this research demonstrates concrete ways to prepare students to become responsible and ethical global citizens. These results emphasize the importance of a holistic approach in higher education that focuses not only on technical knowledge but also on character development and social awareness of students.

Innovation in Teaching Methods

The applied interdisciplinary approach resulted in innovations in teaching methods, such as the use of value-based narratives to explain complex statistical concepts. This supports Spelt et al. (2023) findings on the relationship between interdisciplinarity and pedagogical innovation.

This research revealed that the interdisciplinary approach in statistics teaching encouraged significant innovation in teaching methods. One notable innovation was the use of value-based narratives to explain complex statistical concepts. This method proved highly effective in helping students understand and remember abstract concepts by connecting them to meaningful contexts relevant to their religious and cultural backgrounds. The use of narratives not only enhanced cognitive understanding but also strengthened students' emotional engagement with the material, creating a deeper and more memorable learning experience. These results highlight the potential of interdisciplinary approaches in stimulating pedagogical creativity, encouraging educators to explore new methods that can improve the quality and effectiveness of teaching, especially in courses often considered difficult or less interesting by students.

Increased Learning Motivation

Students reported increased learning motivation when statistical concepts were connected to Islamic principles. This is consistent with Billingsley et al. (2021) research on how integration of religious perspectives can enrich students' understanding of science.

This research revealed a significant increase in student learning motivation when statistical concepts were connected to Islamic principles. Students reported higher levels of interest and

enthusiasm towards statistical material, which was previously often considered a dry and abstract subject. Linking statistical concepts with Islamic teachings and values created personal resonance for students, making the material more relevant and meaningful in the context of their lives. This increased motivation not only impacted class attendance and participation but also the quality and depth of students' understanding of the material. These findings reinforce and extend Billingsley et al. (2021) research results on how integration of religious perspectives can enrich students' understanding of science, by demonstrating its application in the context of statistics teaching. These results indicate that an interdisciplinary approach that connects technical concepts with students' belief systems and values can be a highly effective strategy in increasing learning motivation and, ultimately, improving learning outcomes. These findings have important implications for curriculum design and teaching methods, especially for courses often considered difficult or less interesting by students.

Development of Metacognitive Abilities

The reflection process applied in this research encouraged the development of students' metacognitive abilities. They became more aware of their own thinking processes in learning statistics. These findings align with the concept of 'learning to learn' discussed by Hattie and Donoghue (2016).

This research revealed significant development in students' metacognitive abilities through the reflection process applied in statistics teaching. Students showed a marked increase in awareness of their own thinking processes in learning and applying statistical concepts. They became more adept at identifying effective learning strategies, recognizing their difficulties, and adjusting their learning approaches independently. This reflection process not only enhanced their understanding of statistical material but also developed important 'learning how to learn' skills. Students reported improved abilities in planning, monitoring, and evaluating their own learning, which are key aspects of metacognition. These findings strongly align with the concept of 'learning to learn' discussed by Hattie and Donoghue (2016), affirming the importance of developing metacognitive skills in enhancing learning effectiveness. These results indicate that teaching approaches that encourage reflection and self-awareness can significantly improve not only understanding of specific material but also develop valuable independent learning skills for students in the long term, preparing them for lifelong learning and adaptation to future challenges.

Challenges in Implementation

Although this interdisciplinary approach showed many benefits, there were also challenges in its

implementation. Some students initially felt confused by the integration of religious concepts into the statistics course. This reflects the complexity of implementing interdisciplinary approaches as discussed by Klein (2020).

While this research revealed various benefits of an interdisciplinary approach in statistics teaching, its implementation was not without challenges. One of the main challenges identified was the initial confusion experienced by some students when religious concepts were integrated into the statistics course. These students, who might be accustomed to more conventional and focused teaching approaches, initially struggled to understand the relevance and relationship between religious concepts and statistics. This challenge reflects the inherent complexity in implementing interdisciplinary approaches, as discussed by Klein (2020). Additional time and effort were required to help students bridge the conceptual gap between these two seemingly different domains of knowledge. Instructors had to carefully design and deliver materials to ensure that the integration enriched students' understanding rather than confusing them. These findings highlight the importance of thorough preparation, clear communication about teaching goals and methods, and flexibility in responding to student needs and feedback when implementing interdisciplinary approaches. The results also indicate the need for continuous professional development for instructors to enhance their skills in designing and delivering effective interdisciplinary teaching.

Change in Perception of Statistics

Data analysis showed a significant change in students' perception of statistics. From initially being viewed as a dry and abstract course, statistics began to be seen as a relevant tool for understanding social and educational phenomena. This supports Gal's (2002) argument about the importance of developing statistical literacy.

This research revealed an impressive transformation in students' perception of statistics as a result of the applied interdisciplinary approach. Data analysis showed a significant shift from students' initial view of statistics as a dry and abstract subject to a deeper understanding of its relevance and practical applications. Students began to view statistics not just as a collection of formulas and calculations, but as a powerful tool for understanding and analyzing social and educational phenomena. They developed a new appreciation for how statistics can be used to interpret data in contexts meaningful to them, such as in religious education research or analysis of socio-religious trends. This change in perception not only increased students' interest and motivation but also deepened their understanding of the role of statistics in evidence-based decision-making. These findings strongly support Gal's (2002) argument about the importance of

developing statistical literacy, demonstrating how appropriate teaching approaches can transform statistics from a feared subject into a valued tool. These results emphasize the importance of contextualization and practical application in statistics teaching to enhance its relevance and appeal to students, while preparing them to use statistical understanding effectively in their future careers and lives.

Development of Professional Identity

The reflection process conducted during this research contributed to the development of the researcher's professional identity as an educator. This aligns with the concept of 'professional identity formation' discussed by Beijaard et al. (2004) in the context of teacher education.

This research not only impacted students but also provided deep insights into the development of the researcher's professional identity as an educator. Through the intensive and continuous reflection process during the research, the researcher experienced a significant transformation in self-understanding and role as an educator. The experience of integrating Islamic Religious Education perspectives into statistics teaching prompted the researcher to re-evaluate and expand their conception of what it means to be an effective educator in an interdisciplinary context. This process involved rediscovering core values, strengthening pedagogical beliefs, and developing a more holistic and reflective teaching approach. The researcher found themselves not just as a knowledge transmitter, but also as a learning facilitator who integrates various perspectives and values. These findings strongly align with the concept of 'professional identity formation' discussed by Beijaard et al. (2004), demonstrating how reflective and innovative teaching experiences can fundamentally shape and enrich an educator's professional identity. These results emphasize the importance of providing space and support for educators to engage in reflective practice and pedagogical experimentation, which in turn can enhance the quality of teaching and learning in higher education.

Interdisciplinary Curriculum Design in Higher Education

The findings of this research have profound and broad implications for interdisciplinary curriculum design in higher education. The study results show that integrating religious perspectives and universal values into technical courses like statistics is not only possible but also highly beneficial in enhancing learning relevance and impact. This approach successfully bridges the gap between disciplines often considered separate, creating a more holistic and meaningful learning experience for students. These findings support and extend Newell et al. (2022) argument about the importance of interdisciplinary approaches in higher education, by demonstrating its concrete application in the

context of statistics teaching. The implications of this research challenge traditional paradigms in curriculum design, encouraging higher education institutions to reconsider the structure and content of their study programs. By adopting similar interdisciplinary approaches, institutions can develop curricula that are more adaptive, relevant, and effective in preparing students to face real-world complexities, where technical understanding needs to be balanced with ethical awareness and universal values.

Contribution to Living Theory Development

This research provides a significant contribution to the development of living theory in the context of statistics teaching, expanding our understanding of how this theory can be applied in specific and technical disciplines. Through a process of deep reflection and continuous practice improvement, this research demonstrates how an educator can actively develop and enhance their teaching methods based on direct experience and student feedback. This approach reflects the essence of living theory as outlined by Whitehead and McNiff (2006), where education practitioners not only apply existing theory but also generate new knowledge through their own practice. These findings suggest that living theory can be a highly effective tool in developing innovative and responsive teaching approaches, even in highly structured fields like statistics. Furthermore, this research enriches living theory by demonstrating how interdisciplinary perspectives can be integrated into the process of reflection and practice improvement, opening new avenues for educators' professional development and enhancing the quality of teaching in higher education.

Limitations and Future Research Directions

Although this research provides valuable insights, its limitations as a single case study need to be acknowledged. Future research could expand the scale of this study by involving more educators and different institutional contexts. Additionally, longitudinal studies could provide a deeper understanding of the long-term impact of this interdisciplinary approach.

CONCLUSION

This research demonstrates that the integration of Islamic Religious Education perspectives into the teaching of Educational Statistics can create a rich and meaningful learning environment. This interdisciplinary approach not only enhances students' conceptual understanding of statistics but also develops their ethical awareness, critical thinking, and metacognitive abilities. These findings support Klein's (2020) argument about the value of interdisciplinarity in higher education and align with the concept of holistic education proposed by Miller (2022).

The continuous reflection process, following the living theory approach (Whitehead & McNiff, 2006), proves effective in improving teaching practices and fostering pedagogical innovation. The use of analogies and contextualization of statistical knowledge within the framework of Islamic values enhances the relevance and applicability of the material for students. This supports Aubusson et al.'s (2021) findings on the effectiveness of using analogies in science teaching and aligns with Gravemeijer et al.'s (2022) recommendations on contextualization in mathematics teaching.

Although this research faced challenges in implementation and has limitations as a single case study, its results provide valuable insights into the potential of interdisciplinary approaches in statistics teaching. The positive change in students' perception of statistics and increased learning motivation indicate that integrating religious perspectives and universal values into technical courses can enhance learning impact. These findings have important implications for interdisciplinary curriculum design and the development of educators' professional identity, as discussed by Beijaard et al. (2004) and Newell et al. (2022).

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