

The Competence of Christian Religious Education Teachers in Integrating Biblical Values into STEAM (A Case Study at SD Negeri 078438 Dekha)

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ABSTRACT

The transformation of education in the digital and global era requires integrative models that address not only academic achievement but also moral and spiritual formation. One promising model is STEAM (Science, Technology, Engineering, Arts, and Mathematics), which expands traditional STEM by incorporating the arts to foster creativity, critical thinking, and social sensitivity. Within Christian Religious Education (CRE), integrating biblical values into STEAM presents both unique opportunities and challenges. This study explores the competence of CRE teachers at SD Negeri 078438 Dekha in embedding biblical perspectives into STEAM-based learning. Employing a qualitative case study design, data were collected through semi-structured interviews with two active CRE teachers, the school principal, and selected students, complemented by classroom observations and document analysis. Findings indicate that teachers demonstrated significant competence in designing thematic lessons, engaging students in contextual projects, and integrating biblical principles into discussions of science, technology, and the arts. Project-based learning and reflective practices enabled students to connect faith with real-world issues such as environmental stewardship and social responsibility. However, challenges emerged, including limited resources, insufficient interdisciplinary training, and persistent paradigms separating science from religion. These barriers highlight the need for professional development programs that enhance both theological depth and scientific literacy, as well as institutional support for integrative curriculum policies. Overall, the study affirms that integrating biblical values into STEAM is not only possible but also transformative, equipping students to live faithfully, creatively, and responsibly in the midst of global change while reinforcing the mission of Christian education.

Keywords: Competence, Christian Religious Education, STEAM

INTRODUCTION

The transformation of education in the era of globalization and digitalization has brought about new paradigms that emphasize not only academic achievement but also the

strengthening of moral and spiritual foundations. The growing complexity of the 21st century—marked by rapid technological advancement, cultural diversity, and global interconnectedness—demands an integrative educational model that nurtures holistic human development. One such model gaining increasing prominence is STEAM education (Science, Technology, Engineering, Arts, and Mathematics). As an expansion of the STEM approach, STEAM incorporates the arts as a vital component to foster creativity, critical thinking, emotional intelligence, and social sensitivity (Yakman & Lee, 2012). Within the Indonesian educational context, this model is gradually being adapted to various subjects, including Christian Religious Education (CRE/PAK), thereby opening opportunities for cross-disciplinary learning that bridges scientific exploration with spiritual formation. In Christian Religious Education, integrating STEAM requires teachers to demonstrate a unique set of competencies. Unlike other subjects, CRE is not merely the transmission of doctrinal knowledge but also the formation of values and character grounded in biblical principles (Nainggolan, 2020). Teachers are expected to nurture students who can embody Christian virtues while simultaneously engaging in creative and scientific inquiry. This dual responsibility positions Christian Religious Education teachers as both spiritual mentors and pedagogical innovators. They are tasked with ensuring that faith-based perspectives are meaningfully connected to contemporary educational demands, particularly in preparing students for the challenges of the digital era (Graham, 2019). The integration of biblical values into STEAM learning is not a superficial attempt to insert religious texts into lessons. Instead, it is a deeper pedagogical and theological process that requires careful reflection, contextual understanding, and adaptive strategies (Smith & Lytch, 2021). For instance, the biblical narrative of creation in Genesis can be meaningfully applied to discussions on ecology and human responsibility toward the environment, thereby linking faith with environmental science. Similarly, the teachings of Jesus on love and service can serve as ethical foundations for technological projects that prioritize social welfare and justice (Wright, 2013). Such approaches highlight how biblical narratives can enrich STEAM learning by embedding spiritual values within practical, real-world applications. This integration faces significant challenges. Many Christian Religious Education teachers lack formal backgrounds in science or technology, as their training often emphasizes theology, doctrine, and moral education in traditional forms (Saragih, 2022). This gap can limit their ability to design and implement STEAM-oriented lessons effectively. Furthermore, the limited resources of schools—particularly those in rural or underdeveloped regions such as SD Negeri 078438 Dekha—pose additional barriers. The absence of adequate laboratory equipment, digital tools, and creative learning spaces often hampers the realization of STEAM-based pedagogy (Situmorang, 2021). These challenges underscore the urgent need for teacher professional development that equips CRE educators with both theological depth and scientific-literacy skills. The present study seeks to explore and analyze the competencies of Christian Religious Education teachers in integrating biblical values within STEAM-based learning at SD Negeri 078438 Dekha. Specifically, it examines how teachers design collaborative, contextual, and transformative learning experiences rooted in Christian faith. In addition, the study aims to identify the challenges and opportunities inherent in this integration process and to propose strategic recommendations for the sustainable development of teacher competence. Such analysis is crucial in providing a framework for CRE teachers to remain relevant in the digital age while maintaining the essence of deep spirituality. This research

aspires to contribute to the ongoing discourse on the renewal of Christian Religious Education in Indonesia. By employing a qualitative case study approach, the study highlights how faith can be integrated into scientific and artistic inquiry without losing its transformative power. Education, in its most ideal form, must go beyond equipping students with academic and technological skills; it should also cultivate a holistic personality shaped by truth, compassion, and responsibility, as taught in the Bible (2 Timothy 3:16–17). Thus, the integration of biblical values into STEAM not only enriches the pedagogical landscape but also reaffirms the mission of Christian education: to prepare students to live faithfully, creatively, and responsibly in the midst of global change.

METHODS

This study employed a case study design, chosen for its strength in allowing researchers to explore complex phenomena within their real-life contexts. The case study was conducted at SD Negeri 078438 Dekha, which served as both the research site and the primary source of data. The central focus was on the competence of Christian Religious Education (CRE) teachers in integrating biblical values into the STEAM approach to teaching and learning. By limiting the scope to a single school, the study was able to investigate the depth and nuance of pedagogical practices that may otherwise be overlooked in broader survey designs. The interview process targeted two active CRE teachers, the school principal, and several students who served as complementary informants. Semi-structured interview questions were designed to elicit detailed responses while allowing flexibility for participants to share their experiences, understandings, and strategies in integrating biblical principles with STEAM pedagogy. This format encouraged open dialogue, making it possible to uncover both explicit teaching practices and implicit beliefs underlying the teachers' approaches. Observations were conducted during multiple learning sessions in grades IV and V, specifically when CRE lessons were combined with STEAM-based projects. The observations focused on several aspects: teaching strategies, teacher–student interactions, the use of instructional media, and reflective practices that connected scientific and technological themes with biblical values. This direct engagement with classroom settings provided valuable insights into the practical realities and challenges of integration. Document analysis was also employed to corroborate findings from interviews and observations. The process began with transcribing interview data, followed by initial coding, categorization, and the identification of emerging themes. A hermeneutical lens was further applied to interpret how biblical values were understood and contextualized within STEAM-based teaching practices. This dual process of coding and interpretation enabled the study to capture both the pedagogical techniques and the deeper theological meanings embedded in classroom practices.

RESULT AND DISCUSSION

This study sought to analyze the competence of Christian Religious Education teachers in integrating biblical values into the STEAM approach at SD Negeri 078438 Dekha. The findings reveal that the teachers demonstrated progressive competence that

encompassed theological understanding, pedagogical innovation, and collaborative practices. The integration was not superficial but embedded within project-based learning and contextual teaching, with the goal of forming holistic student character. The CRE teachers at SD Negeri 078438 Dekha demonstrated a strong conceptual grasp of the importance of embedding faith values in science, technology, and the arts. Their understanding reflected a view of Christian education as holistic formation rather than mere doctrinal instruction (Nainggolan, 2020). They saw education as shaping individuals who love God, care for others, and take responsibility for creation. One teacher emphasized during interviews that every discipline within STEAM could serve as a reflective space to experience God's presence and creativity. For example, studying plant structures in biology was seen as a way of appreciating divine design, while recognizing symmetry in visual arts offered insights into God's order and beauty (Smith & Lytch, 2021). The teachers also rejected a symbolic or tokenistic approach to integration. Instead, they sought to embed biblical reflection within entire learning frameworks. For instance, in a project on the water cycle, the teacher connected scientific knowledge to Genesis 2, highlighting God's provision through natural processes that sustain life. In another project-constructing simple water filters-students were reminded of the "cultural mandate" (Genesis 1:28) to responsibly manage and innovate within creation (Wright, 2013). This perspective resonates with scholars who argue that faith and science should not be artificially separated but engaged dialogically to enrich both domains (Graham, 2019). Such theological-pedagogical grounding positioned the teachers as facilitators of integrative and meaningful learning.

The integration of biblical values into STEAM was evident in the teachers' use of project-based learning (PBL) and contextual approaches. Lessons were designed to bring together multiple disciplines with opportunities for faith reflection. One observed project, "Caring for the Environment as an Expression of Love for God's Creation", integrated arts, science, mathematics, and technology. Students created artwork from recycled materials (arts and science), calculated volumes of recyclable materials (mathematics), examined the environmental effects of waste (science and technology), and wrote reflective narratives grounded in Psalm 24:1, affirming that "the earth is the Lord's, and everything in it." Classroom observations confirmed that CRE teachers actively collaborated with homeroom teachers and other subject teachers to co-develop cross-disciplinary lesson plans. Collaboration was essential to identifying "integration points" where biblical reflections could be naturally embedded in STEAM projects (Yakman & Lee, 2012). Reflective questioning and group discussions were frequently employed to elicit students' connections between knowledge and faith. For example, after constructing eco-friendly projects, students were asked: "How does this reflect God's call for us to care for creation?" Such reflective practices echo holistic learning principles where cognition, affect, and action are interwoven (Palmer, 2007). Technology, though limited, was creatively utilized. Teachers used interactive biblical videos, digital science media, and presentation tools to enhance engagement. This indicated teachers' awareness of the importance of digital literacy while maintaining rootedness in Christian values (Prensky, 2010). These practices demonstrate how CRE teachers at SD Negeri 078438 Dekha adopted both innovative and collaborative pedagogical strategies to enact faith-based STEAM integration.

The school lacked adequate laboratories, computers, and art spaces. Teachers often improvised using recycled materials and simple tools. While such improvisation fostered creativity, it also limited the scope of projects compared to schools with better facilities (Situmorang, 2021). The CRE teachers lacked formal backgrounds in science and technology, leading to reliance on self-study and collaboration with colleagues. While this promoted teamwork, it also highlighted the need for professional development programs to equip religious educators with interdisciplinary competencies (Saragih, 2022). Some teachers still perceived CRE as a purely normative subject, disconnected from science or technology. Overcoming this mindset required ongoing reflection and training to help teachers recognize the ethical and theological contributions of faith to scientific inquiry (Elias, 2019). These challenges reveal systemic issues that require institutional and policy support, particularly in terms of resources, training, and mindset change. Without addressing these barriers, integration risks becoming unsustainable.

A notable outcome of integration was its impact on students' holistic formation. Students demonstrated increased reflective, creative, and responsible behaviors. Observations showed that learners were able to articulate ecological concepts not merely as scientific knowledge but as acts of gratitude and stewardship toward God's creation (Hiebert, 1996). For example, in recycling projects, students articulated their actions as both ecological solutions and expressions of faith, stating that preserving creation was a way of worshiping God. Similarly, in social campaigns like creating posters on anti-pollution, students drew connections between their messages and Jesus' command to love others, thus linking environmental care with social responsibility. Interviews revealed that students found projects meaningful because they combined academic, spiritual, and social dimensions. Engagement levels increased, as learners felt that their work carried moral and spiritual significance. This aligns with Christian educational aims of forming whole persons—scientifically literate, ethically grounded, and spiritually alive (Knight, 2006). Thus, integration fostered not only academic learning but also transformative formation, reinforcing the relevance of biblical values in addressing real-world challenges. The findings affirm that CRE teachers can serve as agents of faith-knowledge integration. Their competencies extended beyond biblical knowledge to include pedagogical adaptability, innovation, and collaboration. Yet, the challenges underscore the need for systemic support and sustainable development. Teachers require continuous training in interdisciplinary knowledge and STEAM pedagogy, coupled with theological reflection (Banks, 2012). School leaders and policymakers should provide resources, facilities, and structures that facilitate integration. Without adequate support, innovation risks being limited to isolated efforts. The curriculum should formally recognize the role of religious education in STEAM, positioning it not as a separate subject but as an ethical and spiritual framework for interdisciplinary inquiry. By integrating biblical values into STEAM, CRE teaching becomes more relevant, contextual, and transformative. It affirms that education should not only prepare students for economic productivity but also shape them as responsible stewards of God's creation and compassionate members of society.

CONCLUSION

The findings of this study reveal that Christian Religious Education (CRE) teachers at SD Negeri 078438 Dekha have demonstrated significant competence in integrating biblical values into STEAM-based learning. This competence is evident in their ability to design thematic lessons, engage students in contextual projects, and connect Christian faith principles with the domains of science, technology, and the arts. Through this approach, learning becomes more meaningful as it holistically combines both spiritual and scientific dimensions. The process of integration is not without challenges. Limited resources, insufficient interdisciplinary training, and the lingering paradigm that separates science from religion remain obstacles to be addressed. Therefore, strengthening teachers' capacity through professional development programs that emphasize the synergy between faith and knowledge, as well as institutional support in the form of flexible and integrative curriculum policies, is urgently needed. This study recommends that Christian educational institutions, including teacher training providers, place greater emphasis on developing the interdisciplinary competencies of CRE teachers. In addition, it is necessary to design STEAM-based learning modules with biblical nuances that can be applied contextually across various educational levels. The involvement of church communities, parents, and educational stakeholders is also crucial in creating a Christian education ecosystem that not only enlightens the mind but also nurtures a living faith. The integration of biblical values into STEAM is not an impossibility but rather a significant opportunity to present Christian education that is relevant, contextual, and transformative. Competent CRE teachers are capable of bringing the light of faith into the world of knowledge and of shaping a generation that is not only intellectually competent but also deeply rooted in the values of the Kingdom of God.

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