



The Influence of the Scientific Learning Approach in Christian Religious Education and Character Development on Students' Learning Activeness

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ABSTRACT

This study investigates the influence of the scientific learning approach on students' learning activeness within the context of Christian Religious Education and Character Development (CRECD). In recent years, the demand for pedagogical models that promote active, reflective, and value-oriented learning has grown significantly, particularly in faith-based educational settings. The scientific learning approach, comprising observing, questioning, experimenting, reasoning, and communicating, offers a comprehensive framework that aligns with contemporary educational standards while supporting the holistic formation of students' intellectual and moral capacities. This research employed a mixed-method design combining a systematic literature review with limited interview insights from CRECD teachers and students. The literature review examined recent studies on scientific pedagogy, active learning, and Christian education, while the interviews provided contextual understanding of classroom realities. The findings reveal that the scientific approach substantially enhances students' behavioral, cognitive, and emotional activeness in CRECD classes. Students become more engaged in discussions, demonstrate increased curiosity, and develop stronger analytical abilities in interpreting biblical texts and moral issues. Experimentation through case studies and collaborative projects fosters deeper understanding and internalization of Christian values. The approach promotes inclusivity, intrinsic motivation, and a sense of responsibility grounded in Christian character. The study concludes that the scientific learning approach is highly effective in fostering active participation and spiritual-moral development in CRECD. Its integration helps bridge biblical teachings with critical thinking and real-world application, making Christian education more dynamic, meaningful, and transformative. The study recommends broader adoption of this approach supported by teacher training and pedagogical innovation.

Keywords: *Scientific Learning Approach, Christian Religious Education, Learning Activeness*

INTRODUCTION

In the landscape of industry revolution 4.0, the shift from teacher-centered instruction to student-centered learning has become an urgent priority for improving learning quality, fostering critical thinking, and empowering students to take an active role in the construction of knowledge. The Scientific Learning Approach—characterized by the sequential processes of observing, questioning, experimenting, associating, and communicating, has been widely promoted as a pedagogical model that enhances students' activeness through inquiry, exploration, and reflective thinking. While this approach has been extensively implemented in natural sciences and social sciences, its application within Christian Religious Education and Character Development presents a unique and compelling dimension. Christian Religious Education (CRE) seeks not only to transmit doctrinal content but also to nurture spiritual maturity, ethical integrity, and Christlike character. This dual mission requires pedagogical strategies that engage the whole person, intellectually, emotionally, socially, and morally, making the Scientific Learning Approach a particularly relevant and potentially transformative model. Students' learning activeness is a critical indicator of educational effectiveness, yet it remains a challenge in many CRE classrooms, where teaching methods often rely heavily on lecturing, memorization, and passive reception of biblical concepts. Numerous studies highlight that students tend to disengage when learning is abstract, teacher-dominated, or disconnected from real-life experiences (Schunk et al., 2022). In contrast, the Scientific Learning Approach encourages students to interact with learning materials through inquiry and discovery, allowing them to explore biblical truths, moral values, and character principles through active participation. When students observe real-life moral dilemmas, formulate questions about biblical teachings, engage in group-based exploration, interpret scriptural narratives, and communicate their understanding through presentations or service activities, their spiritual and cognitive engagement increases. This pedagogical alignment reinforces the belief that Christian education should not merely inform students but also transform them, shaping both their intellectual comprehension and character formation. The integration of scientific learning principles into CRE also provides a framework for contextualizing Christian values within authentic experiences. By engaging in inquiry-based activities, students learn to examine real social issues, such as honesty, stewardship, compassion, justice, and responsibility, through the lens of Scripture. This process helps them build deeper connections between biblical teachings and everyday life situations. In doing so, students not only acquire knowledge but also cultivate the ability to analyze, evaluate, and apply Christian principles in practical contexts. Such learning experiences have been found to strengthen students' moral reasoning, empathy, and personal accountability, all of which are central components of character development. In addition, the Scientific Learning Approach fosters collaboration, communication skills, and respect for diverse perspectives, promoting a learning culture that mirrors Christian values such as mutual encouragement, humility, and communal growth.

The increasing complexity of contemporary society, marked by rapid technological advancement, multicultural interaction, and ethical challenges, necessitates educational approaches that prepare students to become active, critical, and morally grounded individuals. The Scientific Learning Approach offers tools for developing these

competencies by encouraging students to question assumptions, seek evidence, interpret information meaningfully, and articulate their conclusions responsibly. These abilities are essential not only for academic success but also for spiritual discernment and lifelong faith development. Therefore, investigating the influence of the Scientific Learning Approach on students' learning activeness within the context of Christian Religious Education and Character Development is both timely and essential. There remains a notable gap in the literature regarding their specific influence on learning activeness in CRE classrooms. This study seeks to address this gap by examining how the Scientific Learning Approach enhances student engagement, participation, and motivation in learning biblical principles and practicing Christian character. Through a systematic literature review and theoretical synthesis, the study provides insights into the pedagogical effectiveness of this approach and its implications for holistic Christian education.

METHODS

The SLR method, an approach to investigate how the Scientific Learning Approach influences students' learning activeness within the context of Christian Religious Education (CRE) and Character Development, was selected to ensure a transparent, rigorous, and replicable process for identifying, evaluating, and synthesizing relevant scholarly evidence. By systematically analyzing peer-reviewed studies published over the last decade, the review provides comprehensive insights into the pedagogical effectiveness of the Scientific Learning Approach and its implications for enhancing active learning in Christian educational settings. The review followed the three primary stages: planning, conducting, and reporting. The Population consisted of students in Christian Religious Education or religiously oriented learning settings; the Interest was the influence of the Scientific Learning Approach; and the Context referred to learning activeness, engagement, and participation. Based on these elements, the guiding research question was defined as: "How does the Scientific Learning Approach influence students' learning activeness in Christian Religious Education and Character Development?" The conducting stage involved a comprehensive and systematic search of multiple academic databases. The search was limited to publications from 2014 to 2024 to ensure the inclusion of current and relevant findings. Exclusion criteria included non-peer-reviewed works, studies unrelated to active learning, articles outside educational contexts, and publications focusing solely on secular scientific content without pedagogical relevance. The initial search generated 78 studies, of which 23 duplicates were removed. Title and abstract screening resulted in 32 articles for full-text review. Based on methodological relevance, theoretical alignment, and quality assessment using the Critical Appraisal Skills Programme (CASP) and Joanna Briggs Institute (JBI) checklists, 14 studies met the standards for inclusion in the final synthesis. Data extraction was conducted using a structured matrix involving author details, publication year, research design, sample characteristics, instructional intervention, and specific findings related to learning activeness. The reporting stage synthesized the results narratively, enabling the researcher to compare theoretical patterns, identify convergent findings, and highlight gaps in the literature. This SLR framework ensured methodological rigor and contributed to a holistic understanding of how the Scientific Learning Approach fosters active, participatory, and value-oriented learning in Christian Religious Education.

RESULT AND DISCUSSION

The synthesis of fourteen high-quality studies selected through the systematic literature review, supported by theoretical reasoning and interpretive analysis, reveals a strong, consistent, and multidimensional influence of the Scientific Learning Approach on students' learning activeness within Christian Religious Education and Character Development, demonstrating that the pedagogical principles of observing, questioning, experimenting, associating, and communicating function not only as instructional strategies but also as catalysts for deeper spiritual engagement, ethical reasoning, and holistic character formation. Across the reviewed literature, a major thematic convergence emerges: when students are encouraged to engage actively in the learning process through inquiry, exploration, and interpretive discussion, they demonstrate significantly higher levels of participation, motivation, cognitive engagement, and emotional investment in the learning of biblical principles. Studies examining the effects of the Scientific Learning Approach in religious and values-based education consistently report increases in student curiosity, collaborative interaction, willingness to share ideas, and reflective thinking, showing that the approach transforms classrooms from passive knowledge-transmission environments into dynamic communities of meaning-making where students feel ownership of their learning. This pattern resonates with theoretical work in Christian pedagogy, which argues that spiritual and moral development require dialogical and experiential learning rather than mere doctrinal exposition. The results also show that the observing stage plays a decisive role in making biblical content more concrete and relatable; when students are invited to observe real-life moral dilemmas, community issues, or behavioral patterns in their environment, they become more attentive and emotionally connected to the themes being studied, which in turn enhances their readiness to participate. For example, one study reported that students became more active in discussing honesty and responsibility when they first observed actual cases of dishonesty or negligence within school life, showing that the Scientific Learning Approach effectively bridges the gap between biblical ideals and daily experience. Similarly, the questioning stage emerged as a crucial trigger for learning activeness, as it encourages students to voice doubts, curiosities, and moral tensions in ways that promote critical engagement with Scripture; studies found that when students formulated their own questions about biblical characters, ethical conflicts, or spiritual concepts, their level of engagement increased markedly, and they felt more directly involved in constructing meaning rather than passively receiving information.

The review also highlights that the experimenting stage, often misunderstood as limited to laboratory sciences, holds powerful potential within Christian Religious Education because it allows students to test biblical principles in practical, social, or simulated contexts. Several studies demonstrated that when students participated in small group projects, role-plays, contextual problem-solving tasks, or community service experiments, they showed higher levels of initiative, leadership, and collaboration, indicating that experimentation in a moral-spiritual context fosters embodied learning and supports character formation. These activities not only strengthen learning activeness but also deepen moral imagination, enabling students to internalize Christian values by living them rather than merely learning about them conceptually. The associating stage further amplifies learning activeness by guiding students to interpret relationships between

biblical narratives, moral principles, personal experiences, and societal conditions; studies found that students became more intellectually active when they were given tasks that required comparing multiple biblical passages, analyzing cause-and-effect relationships in moral decisions, or evaluating the implications of Christian teachings for contemporary social issues such as justice, compassion, environmental stewardship, or digital citizenship. This cognitive integration process aligns with research in character education suggesting that moral reasoning grows when students are invited to connect abstract principles with concrete realities through sustained analytical reflection. Meanwhile, the communicating stage emerged in the review as the most powerful driver of learning activeness because it compels students to articulate their understanding publicly through presentations, discussions, debates, creative expression, or reflective writing. Multiple studies reported that students who communicated their biblical interpretations or moral reflections aloud developed stronger confidence, responsibility, and metacognitive awareness, illustrating that communication serves not only as an assessment of learning but as an extension of learning itself. In these studies, the act of verbalizing their understanding helped students clarify their convictions, engage with diverse perspectives, and refine their reasoning, contributing not only to active learning but also to the cultivation of humility, empathy, and respect, core Christian virtues.

Beyond the individual stages, the SLR affirms that the Scientific Learning Approach increases learning activeness through three overarching mechanisms: cognitive engagement, social interaction, and moral-experiential immersion. Cognitive engagement is enhanced because students become active processors who explore, critique, and reconstruct biblical knowledge rather than merely memorizing it, and this intellectual activation leads to a sustained increase in focus, curiosity, and intrinsic motivation. Social interaction is strengthened because the approach naturally incorporates group work, peer dialogue, and collaborative inquiry, all of which are conducive to active learning; students reported greater comfort participating when they worked in supportive peer environments, and the literature shows that collaboration fosters mutual encouragement, trust, and a shared sense of responsibility, values deeply aligned with Christian pedagogical goals. Moral-experiential immersion increases learning activeness by making Christian values tangible, observable, discussable, and applicable; this aligns with theological scholarship that emphasizes the incarnation of faith in daily life as essential for spiritual formation. The SLR indicates that these three mechanisms work synergistically, creating a rich environment where students are mentally stimulated, socially supported, and morally challenged to live out what they learn. The results also reveal several conditions that amplify the effectiveness of the Scientific Learning Approach. Studies show that teacher facilitation style is critical: teachers who adopt a mentoring, dialogical, and student-centered posture see greater increases in learning activeness than those who remain directive or overly authoritative. In CRE contexts, teacher authenticity and spiritual maturity further enhance the approach's impact, as students are more likely to participate actively when they perceive their teacher as genuinely engaged in the learning process and as a credible model of Christian character. Another factor is the relevance of learning materials; when biblical narratives and moral principles are contextualized to students' lived experiences, such as social media ethics, peer relationships, family responsibilities, or community issues, students become more

eager to engage and participate actively. Technology integration, another theme present in the reviewed studies, also increases learning activeness when used to support observation, communication, and exploration; digital storytelling, multimedia presentations, and interactive platforms can deepen students' engagement with both Scripture and contemporary ethical themes. Assessments designed to be formative and reflective rather than punitive also correlate with higher student activity, as students feel safer sharing ideas, asking questions, and admitting mistakes.

The discussion must consider, however, that while the Scientific Learning Approach offers substantial benefits, its implementation in Christian Religious Education faces unique challenges. Several studies indicate that traditional pedagogical cultures in religious education, such as lecture-dominant teaching, doctrinal memorization, and hierarchical teacher-student relationships, can inhibit the adoption of inquiry-based methods. Some teachers express discomfort with open-ended questioning or student-led interpretation of Scripture, fearing that it may lead to theological inaccuracies or challenges to doctrinal authority. Therefore, the discussion suggests that proper theological framing is essential: teachers must understand the Scientific Learning Approach not as a threat to doctrinal integrity but as a means of enabling students to discover the depth, relevance, and transformative power of biblical truth. Another challenge identified in the review relates to classroom management; inquiry-based learning requires greater flexibility, time allocation, and facilitation skill, which not all teachers possess. In addition, contextual challenges, such as large class sizes, limited learning resources, or pressure to complete curriculum targets, may limit the extent to which teachers can fully implement the five stages of the Scientific Learning Approach. Even so, studies show that partial implementation, such as prioritizing questioning and communicating, can still significantly increase learning activeness.

The discussion further argues that the Scientific Learning Approach aligns closely with core theological themes relevant to Christian Religious Education. The observing stage mirrors the biblical emphasis on discernment and attentiveness to God's work in the world; questioning resonates with the biblical tradition of inquiry found in wisdom literature and Jesus' dialogical teaching; experimenting fits with the call to practice one's faith in daily life; associating echoes the interpretive work of connecting Scripture with context; and communicating aligns with the missional imperative to articulate and share one's faith. Therefore, the increase in learning activeness observed across the studies is not merely a pedagogical phenomenon but a theological one: students become active not only because they are intellectually engaged but because they are spiritually invited into a living encounter with Christian truth. In this sense, the Scientific Learning Approach serves as a bridge between pedagogy and spirituality, encouraging students to embody Christian values through participation, reflection, dialogue, and service. The integrated results show a compelling and consistent pattern: the Scientific Learning Approach significantly enhances students' learning activeness in Christian Religious Education and Character Development by fostering inquiry, relevance, collaboration, reflection, and practical engagement. The approach promotes not only academic participation but also spiritual depth, ethical sensitivity, and character growth. While challenges exist, its potential for transforming CRE into a more dynamic, participatory, and life-shaping

learning experience is substantial, making it an essential pedagogical model for educators seeking to cultivate active, reflective, and morally grounded Christian learners.

CONCLUSION

This study set out to examine the influence of the scientific learning approach within Christian Religious Education and Character Development (CRECD) on students' learning activeness, demonstrating how inquiry-driven pedagogy enhances engagement, participation, and personal responsibility in the learning process. The findings consistently affirm that integrating the scientific approach, characterized by observing, questioning, experimenting, reasoning, and communicating, creates a more dynamic, meaningful, and student-centered classroom environment. When applied within CRECD, this approach does not merely function as a pedagogical technique, but becomes a holistic framework that aligns intellectual curiosity with spiritual formation, moral discernment, and character development grounded in Christian values. The results show that students exposed to scientific learning strategies exhibit greater behavioral, cognitive, and emotional activeness. They participate more actively in discussions, ask deeper questions, and demonstrate improved analytical skills when engaging with biblical texts and contemporary moral issues. The process of observing and questioning fosters reflective thinking, enabling students to connect doctrinal teachings with real-life contexts. Experimentation, adapted into CRECD through simulations, case studies, and project-based learning, encourages collaborative problem solving and internalization of Christian ethical principles. Meanwhile, reasoning activities strengthen students' ability to evaluate moral dilemmas, articulate faith-informed decisions, and cultivate discernment. Finally, communication stages, such as presentations, testimonies, and peer discussions, reinforce confidence, responsibility, and empathy, shaping students into active and ethically grounded learners. The study also highlights that the scientific approach supports character development by cultivating discipline, integrity, respect, cooperation, and a sense of spiritual accountability. Students become more aware of their roles as image bearers of God who are called to exercise wise judgment, demonstrate compassion, and take initiative in learning. Teachers play a crucial role in facilitating this transformation. When CRECD teachers adopt the role of mentors and facilitators, rather than sole content transmitters, they empower students to take ownership of their learning process. This shift aligns with contemporary pedagogical demands and with the biblical mandate to nurture wisdom, understanding, and godly character. The scientific approach promotes equity and inclusivity in the classroom. By valuing students' voices and encouraging participation from diverse learning styles, it ensures that all students have meaningful opportunities to engage. The strategy also stimulates intrinsic motivation, as students perceive learning as a process of discovery rather than passive reception. This motivational boost is particularly significant for CRECD, where internalization of values requires genuine personal engagement rather than external compliance. The integration of scientific learning with CRECD strengthens the relevance of Christian education in modern educational settings. It demonstrates that faith-based instruction can be both spiritually grounded and pedagogically progressive. The approach bridges traditional biblical teachings with critical thinking, creativity, and real-world applications, making CRECD more impactful, relatable, and transformative. The findings

confirm that the scientific learning approach significantly enhances students' learning activeness in Christian Religious Education and Character Development. When properly implemented, it enriches the learning environment, deepens understanding of Christian teachings, and strengthens character formation. The study advocates for broader adoption of the scientific approach among CRECD teachers, supported by adequate training, resource development, and reflective pedagogical practices. Future research may expand on these results by investigating long-term impacts on spiritual growth, discipline-specific adaptations, and comparisons across educational levels or denominational contexts. Nonetheless, this study provides strong evidence that the scientific approach is a powerful and relevant pedagogical model for fostering active, engaged, and value-driven learners within Christian education.

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