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Enhancing learner performance in Religious and Moral Education through ICT Tools: Evidence from Koraso M/A JHS in Ghana

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ABSTRACT

The integration of Information and Communication Technology (ICT) into classroom instruction has attracted considerable attention in educational research; however, empirical evidence on its application in Religious and Moral Education (RME), particularly in rural and semi-rural Ghanaian basic schools, remains limited. This study addressed this gap by examining the relationship between ICT usage, learner engagement, and learners' perceived understanding of RME at Koraso M/A Junior High School. Using a quantitative descriptive survey design, data were collected from 80 purposively selected learners through structured questionnaires and analysed using descriptive statistics, Pearson's correlation, and regression analysis. The findings revealed that although most learners had access to ICT facilities, the use of ICT tools in the classroom remained infrequent. Nevertheless, learners reported positive attitudes towards ICT-supported RME lessons. A weak but significant positive relationship was found between ICT use and learner engagement ($r = 0.260$, $p < .05$), while learner engagement showed a very strong positive relationship with perceived understanding ($\beta = 0.910$, $p < .001$). The study concludes that the educational value of ICT in RME depends primarily on pedagogically meaningful integration that promotes learner engagement rather than on technology availability alone. The study contributes to scholarship by extending empirical evidence on ICT integration in value-based education in rural Ghanaian contexts.

Keywords: Academic Performance, Basic Education, Education, Information and Communication Technology (ICT), Religious Education, Religious and Moral Education (R.M.E.).

INTRODUCTION

The integration of Information and Communication Technology (ICT) into education has become a defining feature of contemporary teaching and learning. Worldwide, digital technologies such as computers, multimedia presentations, projectors, educational software, mobile devices, and online learning platforms

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are increasingly used to promote interactive, learner-centred instruction and improve educational experiences.[1] Beyond expanding access to information, ICT provides opportunities for collaboration, critical thinking, and active learner participation, making it an important component of educational reform in both developed and developing countries.

In Ghana, the promotion of ICT in education has been supported through policy initiatives such as the ICT in Education Policy and the Education Strategic Plan (2018–2030), which seek to strengthen digital literacy and integrate technology into teaching and learning at all educational levels.[2] Although these initiatives have improved access to ICT resources in many schools, significant disparities remain between urban and rural settings. Schools in rural and semi-rural communities often face inadequate ICT infrastructure, unstable electricity supply, limited internet connectivity, and insufficient teacher preparation for technology-supported instruction.[3] Consequently, the availability of ICT facilities does not always translate into effective classroom use.

RME occupies a strategic position within Ghana's basic school curriculum because it seeks to develop learners' moral reasoning, ethical awareness, responsible citizenship, and respect for religious diversity. The subject promotes values such as honesty, tolerance, discipline, responsibility, and peaceful coexistence, which are essential for individual and national development.[4] Despite its importance, RME instruction in many Ghanaian basic schools continues to rely largely on teacher-centred approaches characterised by lectures, note dictation, and memorisation. Such instructional practices often provide limited opportunities for learner participation, critical reflection, and meaningful engagement with moral and religious concepts.[5]

ICT offers opportunities to enrich RME instruction through multimedia presentations, educational videos, digital storytelling, animations, and interactive classroom discussions that can make abstract moral concepts more meaningful and relatable.[6] However, while the educational benefits of ICT have been widely examined in subjects such as Science, Mathematics, and Language Studies, relatively little empirical attention has been devoted to their application in value-based subjects such as RME, particularly within rural and semi-rural Ghanaian schools.[7] This gap limits understanding of whether ICT-supported instruction is associated with greater learner engagement and improved conceptual understanding in RME.

Koraso M/A Junior High School reflects many of the challenges confronting ICT integration in rural Ghanaian education. Although some ICT facilities are available, their classroom use remains inconsistent,

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[1] Farimah Salimi, "Exploring Educational Technology Policies and Practices of the World Bank " (University of Toronto, Canada., 2024); Bidemi Badmus, "From Myth to Reality: The Transformative Power of Online Education for Nigerian Development: Lesson for Africa," *Àgídìgbo: ABUAD Journal of the Humanities* 12, no. 2 (2024): 681–701; Nasser Mansour, "Students' and Facilitators' Experiences with Synchronous and Asynchronous Online Dialogic Discussions and e-Facilitation in Understanding the Nature of Science," *Education and Information Technologies* 29 (February 5, 2024): 15965–97, https://doi.org/10.1007/s10639-024-12473-w.

[2] Mawuadem Koku Amedeker, "Changing Educational Policies: Implications for ICT Integration in Science Instruction and Performance of Students in Ghanaian Senior High Schools.," *International Association for Development of the Information Society*, 2020; Mathias O. Banson, "Achieving Quality and Equity in Ghana's Secondary Education: Strategies, Opportunities, and Constraints " (Oslo Metropolitan University, Norway, 2022).

[3] Yaw Ofosu-Asare, "Developing Classroom ICT Teaching Techniques, Principles and Practice for Teachers in Rural Ghana without Access to Computers or Internet: A Framework Based on Literature Review," *The International Journal of Information and Learning Technology* 41, no. 3 (2024): 262–79.

[4] Bucky Wibawa Karya Guna and Sri Endah Yuwantiningrum, "Building Morality and Ethics through Islamic Religious Education in Schools," *IJGIE (International Journal of Graduate of Islamic Education)* 5, no. 1 (2024): 14–24.

[5] M. A Hanif, "Effectiveness of Teaching-Learning Activities of Religious and Moral Education at the Secondary Level " (University of Dhaka, Dhaka, 2024).

[6] Miftahul Jannah, Lantip Diat Prasojo, and Mohammad Adam Jerusalem, "Elementary School Teachers' Perceptions of Digital Technology Based Learning in the 21st Century: Promoting Digital Technology as the Proponent Learning Tools," *Al Ibtida: Jurnal Pendidikan Guru MI* 7, no. 1 (June 7, 2020): 1, https://doi.org/10.24235/al.ibtida.snj.v7i1.6088.

[7] Charles Nyakito, Catherine Amimo, and Vencie B Allida, "Challenges of Integrating Information and Communication Technology in Teaching among National Teachers' Colleges in Uganda," *East African Journal of Education and Social Sciences* 2, no. 3 (2021): 157–71; Nadiah Zubbir et al., "Exploring the Use of Language Learning Strategies through Reciprocal Determinism," *International Journal of Academic Research in Business and Social Sciences* 13, no. 3 (2023): 1740–58; Jing Zhang et al., "Investigating the Influencing Factors of Teachers' Information and Communications Technology-Integrated Teaching Behaviors toward 'Learner-Centered' Reform Using Structural Equation Modeling," *Sustainability* 13, no. 22 (November 15, 2021): 12614, https://doi.org/10.3390/su132212614.

and RME lessons continue to depend largely on conventional teaching methods. This situation presents an opportunity to examine learners' experiences of ICT-supported instruction within a real educational context and to generate evidence that may inform classroom practice and policy.

Therefore, this study investigated the relationship between ICT usage, learner engagement, learners' attitudes towards ICT-supported RME lessons, and their perceived understanding of RME concepts at Koraso M/A Junior High School. Rather than assuming that technology automatically improves learning, the study examined whether meaningful ICT integration is associated with more engaging learning experiences in Religious and Moral Education.

The study was guided by the following research questions:

1. What is the level of use of ICT during Religious and Moral Education lessons at Koraso M/A Junior High School?
2. What are learners' attitudes towards ICT-supported Religious and Moral Education instruction?
3. What relationship exists between ICT usage and learner engagement in Religious and Moral Education?
4. To what extent does teachers' use of ICT influence learners' perceived understanding of Religious and Moral Education concepts?

The following hypotheses were tested:

H_{01}: There is no statistically significant relationship between ICT usage and learner engagement during Religious and Moral Education lessons.

H_{02}: Teachers' use of ICT tools does not significantly predict learners' perceived understanding of Religious and Moral Education concepts.

LITERATURE REVIEW

The integration of Information and Communication Technology (ICT) into education has fundamentally reshaped teaching and learning by providing opportunities for interactive instruction, collaborative learning, and greater learner participation. Contemporary educational scholarship increasingly recognises ICT as a pedagogical resource rather than merely a technological innovation because its educational value depends largely on how it is integrated into classroom practice.[8] Although numerous studies have examined ICT integration across different subject areas, the evidence about its effectiveness remains uneven, particularly within value-based disciplines such as Religious and Moral Education (RME). This review critically examines existing scholarship by synthesising converging and divergent findings and identifying the knowledge gap that informs the present study.

A dominant theme in the literature is that ICT can promote learner-centred instruction by shifting classrooms from passive knowledge transmission to active knowledge construction. According to An and Mindrila, digital technologies encourage discussion, collaboration, inquiry, and problem-solving, thereby increasing learners' participation in classroom activities.[9] Similarly, Kosmas and Zaphiris, in a longitudinal investigation, reported that technology-enhanced learning environments significantly improved learners' engagement and conceptual understanding because students became active participants rather than passive

[8] Geoff Lawrence et al., "Not More Technology but More Effective Technology: Examining the State of Technology Integration in EAP Programmes," *Relc Journal* 51, no. 1 (2020): 101–16; Zhang et al., "Investigating the Influencing Factors of Teachers' Information and Communications Technology-Integrated Teaching Behaviors toward 'Learner-Centered' Reform Using Structural Equation Modeling"; Majid Zamiri and Ali Esmaeili, "Methods and Technologies for Supporting Knowledge Sharing within Learning Communities: A Systematic Literature Review," *Administrative Sciences* 14, no. 1 (2024): 17.

[9] Yunjo An and Diana Mindrila, "Strategies and Tools Used for Learner-Centered Instruction.," *International Journal of Technology in Education and Science* 4, no. 2 (2020): 133–43.

recipients of instruction.[10] These studies suggest that ICT creates conditions that support meaningful learning through interaction and collaboration.

However, the positive relationship between ICT integration and learning outcomes is not universally supported. Lawrence et al. argue that simply introducing technological devices into classrooms rarely produces substantial educational improvement.[11] Their findings demonstrate that ineffective or superficial technology integration may replicate traditional teacher-centred instruction rather than transform it. Likewise, Zhang et al. observed that ICT contributes positively to learning only when teachers possess the technological and pedagogical competence required to integrate digital tools into learner-centred instructional strategies.[12] These contrasting findings challenge technological determinism by suggesting that educational outcomes depend less on technology itself than on the quality of its pedagogical application.

Within the African context, governments have increasingly invested in ICT infrastructure to improve educational quality. Ghana has introduced several policy initiatives to promote digital literacy and classroom technology integration through the ICT in Education Policy and the Education Strategic Plan.[13] Nevertheless, evidence indicates that implementation remains inconsistent. Ofosu-Asare found that many rural Ghanaian schools continue to experience inadequate ICT infrastructure, unstable electricity, poor internet connectivity, and limited access to digital resources.[14] Nyakito et al. reported comparable findings in Uganda, where institutional constraints and inadequate teacher preparation significantly limited effective ICT utilisation.[15] Together, these studies demonstrate that policy commitment alone is insufficient; Successful integration of ICT requires sustained infrastructural investment, institutional support, and continuous professional development.

Teacher competence represents another recurring theme within the literature. Hennessy et al., through a systematic review of technology-supported professional development programmes in low and middle-income countries, concluded that teachers' confidence, pedagogical knowledge, and technological skills strongly influence classroom ICT integration.[16] Similarly, Adipat emphasised that effective teaching requires integrating technological, pedagogical, and content knowledge rather than technological competence alone.[17] Collectively, these findings suggest that teacher preparedness constitutes one of the strongest determinants of successful ICT implementation. Conversely, where teachers lack adequate training, available ICT facilities often remain underutilised or are employed merely as presentation tools without promoting meaningful learner interaction.

Although there is considerable consensus on the importance of teacher competence, disagreement remains regarding the extent to which ICT directly influences academic performance. Some studies report measurable improvements in learners' achievement after technology-supported instruction. For example, Abdullahi et al. found that interactive multimedia instruction significantly improved secondary school students' academic performance in Social Studies by improving conceptual understanding and classroom

[10] Panagiotis Kosmas and Panayiotis Zaphiris, "Improving Students' Learning Performance through Technology-Enhanced Embodied Learning: A Four-Year Investigation in Classrooms," *Education and Information Technologies* 28, no. 9 (2023): 11051–74.
[11] Lawrence et al., "Not More Technology but More Effective Technology: Examining the State of Technology Integration in EAP Programmes."
[12] Zhang et al., "Investigating the Influencing Factors of Teachers' Information and Communications Technology-Integrated Teaching Behaviors toward 'Learner-Centered' Reform Using Structural Equation Modeling."
[13] Amedeker, "Changing Educational Policies: Implications for ICT Integration in Science Instruction and Performance of Students in Ghanaian Senior High Schools."
[14] Ofosu-Asare, "Developing Classroom ICT Teaching Techniques, Principles and Practice for Teachers in Rural Ghana without Access to Computers or Internet: A Framework Based on Literature Review."
[15] Nyakito, Amimo, and Allida, "Challenges of Integrating Information and Communication Technology in Teaching among National Teachers' Colleges in Uganda."
[16] Sara Hennessy et al., "Technology Use for Teacher Professional Development in Low- and Middle-Income Countries: A Systematic Review," *Computers and Education Open* 3 (December 2022): 100080, https://doi.org/10.1016/j.caeo.2022.100080.
[17] Surattana Adipat, "Developing Technological Pedagogical Content Knowledge (TPACK) through Technology-Enhanced Content and Language-Integrated Learning (T-CLIL) Instruction," *Education and Information Technologies* 26, no. 5 (September 26, 2021): 6461–77, https://doi.org/10.1007/s10639-021-10648-3.

participation.[18] Similarly, Bansah and Darko Agyei reported that learners who perceived digital learning platforms as useful and engaging demonstrated greater motivation and higher levels of participation.[19] In contrast, other researchers caution that improvements in achievement often depend on contextual variables, including instructional quality, learner motivation, socioeconomic background, and institutional support rather than ICT use alone.[20] This inconsistency suggests that academic performance is shaped by multiple interacting factors rather than technology in isolation.

Research specifically focusing on Religious and Moral Education presents an even more limited evidence base. Existing scholarship primarily examines curriculum implementation, moral formation, ethical development, and religious values, with comparatively little attention given to digital pedagogy.[21] Hanif argues that conventional instructional approaches in RME often rely on memorisation and teacher exposition, limiting learners' opportunities for discussion, moral reasoning, and reflective thinking.[22] By contrast, multimedia resources, digital storytelling, videos, and interactive case studies can contextualise abstract moral concepts and encourage reflective engagement. Nevertheless, empirical investigations examining these possibilities within Ghanaian basic schools remain scarce. Consequently, the extent to which ICT contributes to learner engagement and perceived understanding in RME remains insufficiently documented.

Another important issue emerging from the literature concerns educational inequality. Although ICT is frequently promoted as an instrument to improve educational quality, unequal access to technological resources may unintentionally widen existing disparities between urban and rural schools.[23] Ofosu-Asare and Nyakito et al. demonstrate that schools located in disadvantaged communities often lack the infrastructure, technical support, and trained personnel necessary for meaningful technology integration.[24] Consequently, learners in these contexts may derive fewer educational benefits from national ICT policies than their counterparts in better-resourced schools. These findings underscore the importance of examining ICT integration within specific educational settings rather than assuming uniform implementation across contexts.

Drawing on the reviewed literature, this study proposes a conceptual framework in which ICT usage functions as the independent variable, learner engagement serves as the mediating variable, and learners' perceived understanding of RME concepts represents the dependent variable, while teacher pedagogical competence operates as an enabling contextual factor. The framework assumes that the mere availability or frequency of ICT use does not automatically enhance learning. Instead, ICT contributes to improved educational outcomes when teachers integrate technological tools through learner-centred pedagogical approaches that stimulate participation, interaction, discussion, and reflection. Increased learner engagement subsequently strengthens learners' conceptual understanding of Religious and Moral Education. Therefore, it is expected that the influence of ICT will operate primarily through its capacity to facilitate meaningful participation rather than through direct technological exposure alone.

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[18] Abdullahi Binta, Uthman Shehu Lawal, and Ofuokwu Habiba, "Effects of Interactive Multimedia Instruction on Academic Performance of Secondary School Students in Social Studies in Kaduna State, Nigeria," June 17, 2024, 105–16.

[19] Abednego Kofi Bansah and Douglas Darko Agyei, "Perceived Convenience, Usefulness, Effectiveness and User Acceptance of Information Technology: Evaluating Students' Experiences of a Learning Management System," *Technology, Pedagogy and Education* 31, no. 4 (2022): 431–49.

[20] Lawrence et al., "Not More Technology but More Effective Technology: Examining the State of Technology Integration in EAP Programmes."

[21] Hanif, "Effectiveness of Teaching-Learning Activities of Religious and Moral Education at the Secondary Level ," 2024; Guna and Yuwantiningrum, "Building Morality and Ethics through Islamic Religious Education in Schools."

[22] M. A Hanif, "Effectiveness of Teaching-Learning Activities of Religious and Moral Education at the Secondary Level " (University of Dhaka, , 2024).

[23] Zamiri and Esmaeili, "Methods and Technologies for Supporting Knowledge Sharing within Learning Communities: A Systematic Literature Review."

[24] Ofosu-Asare, "Developing Classroom ICT Teaching Techniques, Principles and Practice for Teachers in Rural Ghana without Access to Computers or Internet: A Framework Based on Literature Review"; Nyakito, Amimo, and Allida, "Challenges of Integrating Information and Communication Technology in Teaching among National Teachers' Colleges in Uganda."

In general, the literature demonstrates broad agreement that ICT possesses considerable potential to enrich teaching and learning, yet its effectiveness remains dependent on pedagogical quality, teacher competence, institutional support, and contextual realities. Existing scholarship also reveals contradictory evidence regarding the direct influence of ICT on academic performance and highlights a significant shortage of empirical studies within Religious and Moral Education, particularly in rural Ghanaian basic schools. By examining the relationships among ICT usage, learner engagement, and learners' perceived understanding in a semi-rural RME context, the present study addresses this gap and extends current scholarship on technology integration in value-based education.

THEORETICAL FRAMEWORK

This study is anchored in Lev Vygotsky's Social Constructivist Theory, which conceptualises learning as a socially mediated process through which learners actively construct knowledge through interaction with teachers, peers, and instructional resources.[25] Unlike transmission-oriented perspectives that regard learners as passive recipients of information, Social Constructivism emphasises that meaningful learning emerges through dialogue, collaboration, guided participation, and engagement with cultural tools. Within contemporary classrooms, ICT constitutes one of these cultural tools, making the theory particularly appropriate for explaining how technology can support teaching and learning in Religious and Moral Education (RME).

The theory provides a clear explanation for the relationships among the variables examined in this study. The independent variable, ICT usage, represents the mediating tools through which learning experiences are enriched. Digital resources such as videos, multimedia presentations, animations, digital storytelling, and interactive applications provide multiple representations of moral and religious concepts, enabling learners to explore ideas beyond conventional textbook instruction. However, Social Constructivism does not assume that technology itself produces learning; rather, ICT becomes educationally valuable only when it supports meaningful interaction and knowledge construction.

The mediating variable, learner engagement, occupies a central position within Vygotsky's framework. According to the theory, learners develop understanding by actively participating in discussions, asking questions, collaborating with peers, and reflecting on new experiences. ICT-supported instruction can stimulate these forms of engagement by encouraging classroom dialogue, collaborative problem-solving, and reflective learning activities. In RME, where learners are expected to analyse moral dilemmas, appreciate diverse religious perspectives, and develop ethical reasoning, active engagement is particularly important because understanding extends beyond factual recall to interpretation and value formation.

The dependent variable, learners' perceived understanding of RME concepts, is also explained through Social Constructivism. Vygotsky's concept of the Zone of Proximal Development (ZPD) suggests that learners can achieve higher levels of understanding when supported by appropriate instructional guidance. Within this study, ICT functions as a scaffold that allows teachers to simplify abstract religious and moral concepts through visual demonstrations, multimedia explanations, and interactive learning experiences. Consequently, improved understanding is expected to result not from technology alone but from learners' active engagement with ICT-mediated instructional activities under teacher guidance.

The theory also clarifies the role of the teacher within ICT-supported learning. Rather than acting solely as a transmitter of knowledge, the teacher functions as a facilitator who designs learning experiences, provides scaffolding, encourages interaction, and supports learners as they construct meaning. This perspective aligns closely with the study's assumption that teachers influence learning indirectly by creating engaging ICT-supported classroom environments rather than simply introducing technological devices.

[25] Reham Alkhudiry, "The Contribution of Vygotsky's Sociocultural Theory in Mediating L2 Knowledge Co-Construction," *Theory and Practice in Language Studies* 12, no. 10 (September 30, 2022): 2117–23, https://doi.org/10.17507/tpls.1210.19.

Despite its relevance, Social Constructivism has important limitations. First, the theory places strong emphasis on social interaction while giving comparatively limited attention to structural constraints such as inadequate ICT infrastructure, unreliable electricity, limited internet access, and institutional resource disparities that characterise many rural schools in Ghana. Second, it assumes that teachers possess sufficient pedagogical competence to facilitate collaborative learning, whereas ineffective ICT integration may result from inadequate professional training rather than shortcomings in the theory itself. Finally, Social Constructivism explains the processes through which learning occurs but offers limited guidance for measuring objective academic achievement. Consequently, the theory is most effective when complemented by empirical evidence that examines how contextual factors influence technology-supported instruction.

Conceptual Model

The conceptual model guiding this study is illustrated as follows:
ICT Usage (Independent Variable) → Learner Engagement (Mediating Variable) → Learners' Perceived Understanding of RME Concepts (Dependent Variable)
Teacher Pedagogical Competence and School ICT Infrastructure function as enabling contextual factors that influence the effectiveness of ICT integration across all stages of the learning process.
By explicitly linking ICT usage, learner engagement, and perceived understanding within a Social Constructivist perspective, the framework provides a coherent theoretical foundation for explaining how meaningful ICT integration can support learner-centred Religious and Moral Education in semi-rural Ghanaian schools.

METHODOLOGY

Research Design

This study adopted a quantitative research approach using a descriptive survey design to investigate the use of ICT tools in enhancing learners' engagement and perceived understanding of RME at Koraso M/A Junior High School in Ghana. The descriptive survey design was considered appropriate because it allowed the collection of standardized data on learners' experiences, attitudes, and perceptions within their natural classroom environment without manipulating any study variables.[26] The design further allowed the researchers to examine relationships among ICT usage, learner engagement, and perceived understanding using statistical techniques.

Study Area, Population and Sample

The study was conducted at Koraso M/A Junior High School in the Dormaa Central Municipality of the Bono Region, Ghana. The target population comprised all Junior High School learners enrolled at the school together with the Religious and Moral Education teacher responsible for ICT-supported instruction.

A purposive sampling technique was employed to select 80 learners who had previously participated in ICT-supported RME lessons. The RME teacher was also included because of direct involvement in the implementation of ICT during classroom instruction. The sample size was considered adequate for the study because it represented learners with the experience required to provide informed responses and satisfied the minimum sample requirements for descriptive survey research involving correlation and regression analyses. Furthermore, the relatively homogeneous nature of the study population justified using purposive sampling to obtain information capable of addressing the research objectives.

[26] Dennis Alonzo, Jean Bejano, and Velma Labad, "Alignment between Teachers' Assessment Practices and Principles of Outcomes-Based Education in the Context of Philippine Education Reform," *International Journal of Instruction* 16, no. 1 (January 1, 2023): 489–506, https://doi.org/10.29333/iji.2023.16127a.

Research Instrument

Data were collected using a structured questionnaire developed from the objectives of the study and relevant literature on ICT integration in education. The instrument comprised five sections: demographic characteristics, access to ICT facilities, frequency of ICT use during RME lessons, learners' attitudes towards ICT-supported instruction, and perceptions of learner engagement and understanding. Most items were measured on a five-point Likert scale ranging from 1 = Strongly Disagree to 5 = Strongly Agree, while a few items required categorical responses.

Validity of the Instrument

To ensure content and face validity, the draft questionnaire was independently reviewed by three experts in Educational Technology, Religious and Moral Education, and Educational Measurement and Evaluation. Their comments focused on item relevance, clarity, wording, and alignment with the study objectives. Based on their recommendations, ambiguous statements were revised, repetitive items were removed, and the sequencing of questions was improved to enhance readability and logical flow. These revisions strengthened the instrument's ability to measure the intended constructs.

Pilot Study and Reliability

Prior to the main data collection, a pilot study involving 20 Junior High School learners from a neighbouring school with similar demographic and educational characteristics was conducted. The pilot participants were excluded from the final study to prevent response contamination. Feedback obtained from the pilot exercise confirmed that the questionnaire items were understandable, appropriately sequenced, and could be completed in approximately 20 minutes.

The internal consistency of the instrument was assessed using Cronbach's alpha coefficient. The overall reliability coefficient was $\alpha = 0.86$, indicating high internal consistency. The reliability coefficients for the major constructs were also satisfactory: ICT usage ($\alpha = 0.82$), learner engagement ($\alpha = 0.88$), and learners' perceived understanding ($\alpha = 0.84$). These values exceeded the recommended minimum threshold of 0.70, confirming that the instrument was sufficiently reliable for the main study.

Data Collection Procedure

Following approval from the school authorities, questionnaires were administered personally by the researchers during normal school hours. Participants were informed about the purpose of the study and provided with clear instructions on completing the questionnaire. The researchers remained available to clarify any questions while ensuring that responses were completed independently. All completed questionnaires were retrieved immediately after administration, resulting in a 100% response rate.

Data Analysis

Completed questionnaires were coded and entered into the Statistical Package for the Social Sciences (SPSS) version 25 for analysis. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarise respondents' characteristics and patterns of ICT usage. Pearson's correlation analysis examined the relationships among ICT usage, learner engagement, and perceived understanding, while multiple regression analysis determined the predictive influence of learner engagement and teachers' ICT-supported instruction on learners' perceived understanding of RME concepts. Statistical significance was determined at the 0.05 level.

Ethical Considerations

Ethical standards were observed throughout the study. Permission to conduct the research was obtained from the school administration before data collection commenced. Participants were informed about the objectives of the study, and participation was entirely voluntary. Because the respondents were minors, permission was

obtained through the school authorities acting in accordance with institutional procedures, while learners provided informed assent before participation. Respondents were assured of anonymity and confidentiality; no identification information was collected, and all data were used solely for academic purposes. Participants were also informed of their right to withdraw from the study at any stage without any adverse consequences.

PRESENTATION OF FINDINGS AND DISCUSSION

This section presents, analyses, and discusses the findings of the study in relation to the research questions and existing literature. Rather than presenting results and discussion separately, the two have been integrated to facilitate a critical interpretation of the findings within the broader scholarship on ICT integration and learner-centred pedagogy. Since the study used a correlational survey design, the findings are interpreted as associations rather than evidence of causal relationships.

Socio-Demographic Characteristics of Respondents

A total of 80 learners participated in the study, representing a 100% response rate. Female respondents constituted 60.0% (n = 48), while 40.0% (n = 32) were male. Regarding age, 60.0% (n = 48) were between 13 and 15 years, whereas 40.0% (n = 32) were aged 10–12 years. These characteristics indicate that respondents were within the expected age bracket for Junior High School learners and therefore capable of providing informed responses regarding ICT-supported learning experiences.

ICT Access and Classroom Utilisation

Table 1 summarises learners' access to ICT facilities and their exposure to ICT-supported Religious and Moral Education (RME) lessons.

Table 1: Access to ICT Facilities and ICT-Supported Instruction (N = 80)

Variable	Frequency	Percentage (%)
Access to ICT facilities	49	61.3
No access to ICT facilities	31	38.7
Previously experienced ICT-supported RME lessons	61	76.3
No previous ICT-supported RME lessons	19	23.7

The findings indicate that although most learners had access to some ICT facilities and had experienced ICT-supported RME lessons, classroom use remained limited. Approximately 41.3% of respondents reported that digital projectors were never used during RME lessons, while 45.0% indicated that they were rarely used. These findings reveal a noticeable gap between ICT availability and its routine pedagogical application.

This finding extends previous studies by demonstrating that access alone does not necessarily translate into effective classroom integration. Although Ofosu-Asare similarly reported infrastructural constraints in rural Ghanaian schools, the present study suggests that limited utilisation may also reflect pedagogical rather than purely infrastructural challenges.[27] Even where there are basic ICT facilities, teachers may not consistently incorporate them into classroom practice due to limited confidence, insufficient digital instructional materials, or competing curricular demands. This observation supports Lawrence et al., who argued that educational transformation depends more on effective pedagogical integration than on technology availability alone.[28]

[27] Ofosu-Asare, "Developing Classroom ICT Teaching Techniques, Principles and Practice for Teachers in Rural Ghana without Access to Computers or Internet: A Framework Based on Literature Review."
[28] Lawrence et al., "Not More Technology but More Effective Technology: Examining the State of Technology Integration in EAP Programmes."

However, the findings differ from studies conducted in relatively better-resourced educational environments where regular ICT integration has become part of everyday classroom practice.[29] These differences suggest that contextual factors remain important in understanding ICT implementation in educational settings.

Learners' Attitudes Towards ICT-Supported RME Lessons

Descriptive statistics were computed to examine learners' perceptions of ICT-supported instruction.

Table 2: Descriptive Statistics for Major Study Variables

Variable	Mean	SD
ICT usage	2.63	0.79
Learner engagement	3.94	0.68
Positive attitude towards ICT	4.18	0.61
Perceived understanding of RME	4.09	0.65

The results show that learners expressed highly positive attitudes towards ICT-supported RME instruction (M = 4.18, SD = 0.61), despite reporting relatively low levels of actual ICT usage (M = 2.63, SD = 0.79). More than three-quarters of respondents agreed that ICT-supported lessons were more enjoyable, interactive, and easier to understand than conventional lessons.

These findings provide an important nuance to the existing literature. Previous studies have generally concluded that technology enhances learner motivation.[30] The present findings support this conclusion but also demonstrate that positive learner attitudes may exist even where ICT integration is relatively infrequent. This suggests that learners may value technology because of its novelty, visual appeal, or perceived relevance rather than because of extensive exposure alone.

On the contrary, the findings differ from studies that argue that learner motivation depends primarily on frequent ICT use. The present results indicate that positive attitudes and regular classroom implementation are not necessarily synonymous. Learners appreciated ICT-supported lessons despite acknowledging that such lessons occurred only occasionally.

Relationship Between ICT Usage and Learner Engagement

Pearson's Product-Moment Correlation analysis was conducted to examine relationships among the study variables.

Table 3: Correlation Matrix

Variable	1	2	3
1. ICT usage	1		
2. Learner engagement	.260	1	
3. Perceived understanding	.312	.929	1

Note: $p < .05$, $p < .01$.

[29] Kosmas and Zaphiris, "Improving Students' Learning Performance through Technology-Enhanced Embodied Learning: A Four-Year Investigation in Classrooms."

[30] Bansah and Darko Agyei, "Perceived Convenience, Usefulness, Effectiveness and User Acceptance of Information Technology: Evaluating Students' Experiences of a Learning Management System"; Kosmas and Zaphiris, "Improving Students' Learning Performance through Technology-Enhanced Embodied Learning: A Four-Year Investigation in Classrooms."

The correlation analysis revealed a weak but statistically significant positive relationship between ICT usage and learner engagement ($r = .260$, $p < .05$). A stronger positive association was observed between learner engagement and perceived understanding ($r = .929$, $p < .001$).

These findings should be interpreted carefully. Although learners who reported greater ICT usage also tended to report higher engagement, the relatively modest correlation coefficient indicates that ICT frequency explains only a limited proportion of the variation in engagement. Other classroom factors—including instructional quality, teacher enthusiasm, peer interaction, and learners' intrinsic motivation—are likely to contribute substantially to learners' engagement.

This interpretation both supports and qualifies previous research. Although Zhang et al. and An and Mindrila reported positive associations between ICT integration and learner engagement, Lawrence et al. cautioned that technology alone cannot transform learning.[31] The present findings align more closely with this latter position by suggesting that ICT constitutes one among several factors associated with engagement rather than a dominant determinant.

Regression Analysis

Multiple regression analysis was performed to determine whether ICT-related variables were associated with learners' perceived understanding of RME concepts.

Table 4: Multiple Regression Results

Predictor	B	95% CI	T	P
Learner engagement	.910	[0.81, 1.01]	18.67	<.001
Teacher ICT-supported instruction	.026	[-0.10, 0.15]	0.42	.677

Model Summary

- $R^2 = .872$
- Adjusted $R^2 = .868$
- $F(2,77) = 262.41$
- $p < .001$
- Durbin-Watson = 1.94

Preliminary diagnostic tests indicated that the assumptions of multiple regression were reasonably satisfied. Residual plots suggested approximate linearity and homoscedasticity, tolerance values exceeded 0.20, variance inflation factors were below 5.0, and residuals approximated a normal distribution.

The regression model explained approximately 87.2% of the variance in learners' perceived understanding. Learner engagement emerged as the only statistically significant predictor ($\beta = .910$, $p < .001$), whereas teacher ICT-supported instruction was not independently significant ($\beta = .026$, $p = .677$) after learner engagement was included in the model.

Importantly, these findings should not be interpreted causally. Because the study used a cross-sectional correlational design based largely on learners' perceptions, the regression analysis identifies statistical associations rather than cause-and-effect relationships. The findings simply indicate that higher reported engagement was associated with higher reported understanding.

[31] Zhang et al., "Investigating the Influencing Factors of Teachers' Information and Communications Technology-Integrated Teaching Behaviors toward 'Learner-Centered' Reform Using Structural Equation Modeling"; An and Mindrila, "Strategies and Tools Used for Learner-Centered Instruction"; Lawrence et al., "Not More Technology but More Effective Technology: Examining the State of Technology Integration in EAP Programmes."

These results contribute to existing scholarship by suggesting that learner engagement may represent an important pathway through which ICT-supported instruction is experienced by learners. This interpretation is consistent with Vygotsky's Social Constructivist perspective, which emphasises active participation and guided interaction as central to meaningful learning. However, unlike some earlier studies that directly attributed improved educational outcomes to ICT, the present findings indicate that pedagogical engagement appears to be more closely associated with perceived understanding than technology use itself.[32]

Integrated Discussion

The overall findings suggest that ICT integration within Religious and Moral Education at Koraso M/A Junior High School remains at a developing stage. Although most learners had experienced ICT-supported lessons and expressed favourable attitudes towards educational technology, classroom utilisation remained relatively infrequent. This apparent contradiction highlights an important issue within current ICT scholarship. National ICT policies may improve access to technological resources, yet classroom transformation depends on sustained pedagogical implementation rather than infrastructure alone.

Another notable finding concerns the central role of learner engagement. The analysis consistently showed that engagement was more strongly associated with learners' perceived understanding than the frequency of ICT use itself. This finding deepens existing literature by suggesting that technology may be educationally valuable primarily when it facilitates active participation, classroom discussion, reflection, and collaborative learning. In value-based subjects such as Religious and Moral Education, where moral reasoning and critical reflection are fundamental learning outcomes, these forms of engagement appear particularly relevant.

The study also contributes to ongoing debates about technology and learning outcomes. Some previous studies have reported strong positive relationships between ICT integration and academic achievement, whereas others have argued that contextual variables moderate these relationships. The present findings lend greater support to the latter perspective. Rather than suggesting that ICT independently improves learning, the evidence indicates that meaningful instructional practices and learner participation remain central considerations.

Overall, the study extends the limited empirical literature on ICT integration within Religious and Moral Education in Ghanaian basic schools. It demonstrates that learners generally perceive ICT-supported instruction positively, but it also highlights the importance of interpreting technology within its pedagogical and institutional context. Therefore, the findings reinforce the argument that investments in ICT infrastructure should be accompanied by sustained teacher professional development, curriculum support, and learner-centred instructional strategies if technology is to be meaningfully integrated into value-based education such as Religious and Moral Education.

RECOMMENDATIONS

The recommendations presented below are derived directly from the findings of this study and are intended to improve the effective integration of ICT into the teaching and learning of RME in Ghanaian basic schools, particularly within rural and semi-rural contexts.

The study found that although most learners had access to ICT facilities and expressed positive attitudes towards ICT-supported RME lessons, the actual classroom use of ICT remained infrequent. This suggests that the challenge lies less in learners' willingness to embrace technology than in its consistent pedagogical application. Consequently, the Ghana Education Service (GES) and school administrators should prioritise structured teacher professional development programmes that focus on the pedagogical integration of ICT rather than on basic digital literacy alone. Training should equip teachers with practical

[32] For example Binta, Lawal, and Habiba, "Effects of Interactive Multimedia Instruction on Academic Performance of Secondary School Students in Social Studies in Kaduna State, Nigeria."

skills for using multimedia presentations, digital storytelling, educational videos, interactive discussions, and other learner-centred approaches that promote active participation in RME lessons. This training should be organised at least twice each academic year through district-level workshops and school-based professional learning communities to ensure continuous improvement.

The findings also revealed that learner engagement demonstrated the strongest statistical association with learners' perceived understanding of RME concepts. This indicates that teachers should intentionally design ICT-supported lessons that encourage discussion, collaborative learning, critical reflection, and problem-solving rather than using technology merely for content presentation. Circuit supervisors and Headteachers should therefore include learner engagement strategies as part of routine instructional supervision and classroom observation. Schools should develop simple monitoring checklists to evaluate not only whether ICT is used during lessons but also how effectively it promotes interaction and participation.

Another important finding was the inconsistency between ICT availability and classroom utilisation. To address this gap, school management committees, district education authorities, and local government institutions must strengthen ICT infrastructure by ensuring that the available equipment remains functional and accessible for instructional purposes. Priority should be given to maintaining existing computers and projectors, providing reliable electricity, and improving internet connectivity, where feasible. These interventions should be incorporated into annual school improvement plans, with periodic reviews conducted at the end of each academic year to assess progress and identify remaining infrastructural needs.

Given that this study relied primarily on learners' perceptions of understanding rather than objective measures of academic achievement, schools should also establish simple mechanisms for evaluating the educational outcomes of ICT-supported instruction. Teachers may periodically compare learners' classroom assessments, project work, and participation before and after introducing ICT-based instructional strategies. Such classroom-based evidence would enable schools to determine whether increased learner engagement is accompanied by measurable improvements in learning outcomes and would provide valuable feedback for refining instructional practices.

The study further highlights the need for stronger collaboration among educational stakeholders. The Ghana Education Service, teacher education institutions, faith-based organisations, non-governmental organisations, community leaders, and private-sector partners should work collaboratively to support ICT integration in rural schools through resource mobilisation, mentorship programmes, and periodic capacity-building initiatives. Such partnerships would help reduce inequalities in access to educational technology and promote sustainable implementation.

Finally, future research could adopt longitudinal and mixed-methods designs that involve multiple schools in different regions of Ghana to examine how ICT integration influences both perceived and objectively measured learning outcomes over time. Such studies would strengthen the evidence base for policy formulation and provide a more comprehensive understanding of technology-supported Religious and Moral Education within diverse educational contexts.

CONCLUSION

This study examined the association between Information and Communication Technology (ICT) usage, learner engagement, and learners' perceived understanding of Religious and Moral Education (RME) at Koraso M/A Junior High School in Ghana. The findings indicate that although learners generally had some access to ICT facilities and expressed favourable attitudes towards ICT-supported instruction, the integration of technology into RME lessons remained inconsistent. More importantly, the results suggest that learner engagement, rather than the mere frequency of ICT use, was more strongly associated with learners' perceived understanding of RME concepts. These findings reinforce the view that technology contributes most effectively to learning when integrated through purposeful, learner-centred pedagogical practices that encourage participation, discussion, reflection, and collaboration.

The study makes an important theoretical contribution by extending the application of Vygotsky's Social Constructivist Theory to the teaching of Religious and Moral Education within a semi-rural Ghanaian context. Although previous studies have largely applied the theory to Science, Language, and Mathematics education, this research demonstrates its relevance to value-based education by showing that ICT functions as a mediating instructional tool whose educational significance depends on the quality of learner interaction it facilitates. Therefore, the findings support the proposition that learner engagement represents an important mechanism through which technology is associated with meaningful learning experiences in RME.

From a policy perspective, the study highlights the need for educational interventions that move beyond the provision of technological infrastructure alone. Investments in computers, projectors, and internet connectivity should be accompanied by sustained teacher professional development, curriculum support, and instructional supervision that emphasise effective pedagogical integration of ICT. For the Ghana Education Service, district education offices, and school administrators, these findings underscore the importance of embedding learner-centred ICT practices within teacher development programmes and school improvement strategies, particularly in rural and semi-rural schools where implementation challenges remain pronounced.

Notwithstanding these contributions, the study has several limitations that should be considered when interpreting the findings. First, the research was conducted in a single Junior High School, thereby limiting the generalisability of the results to other educational contexts. Second, the study employed a cross-sectional descriptive survey design and therefore identified statistical associations rather than causal relationships among the variables. Third, learners' understanding and academic performance were measured primarily through self-reported perceptions rather than objective achievement data. Finally, the exclusive reliance on quantitative methods limited opportunities to explore teachers' and learners' experiences in greater depth.

These limitations provide important directions for future research. Subsequent studies may employ mixed-methods and longitudinal research designs that involve larger samples drawn from multiple schools and regions to improve external validity. Future investigations may also incorporate objective measures of academic achievement alongside perception-based data to determine whether ICT-supported instruction is associated with measurable improvements in learning outcomes. In addition, qualitative studies exploring teachers' pedagogical experiences, institutional challenges, and learners' lived experiences of ICT-supported Religious and Moral Education would provide richer insights into how technology can be effectively integrated into value-based education. Collectively, such research would strengthen the evidence base for educational policy and contribute to the development of more contextually responsive ICT integration strategies in Ghanaian basic schools.

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