

ICT Utilization in Teaching Islamic and Arabic Language and its Relation to Student Learning

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Abstract

This study examined the utilization of Information and Communication Technology (ICT) in the teaching and learning process of Islamic Studies and Arabic Language (ISAL) education in the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM). The study aimed to determine the level of ICT competencies among teachers, assess the extent of ICT integration in instructional delivery, identify challenges affecting ICT implementation, and examine the relationship between ICT utilization and student learning outcomes. Guided by the concepts of technology integration in education, the study employed a quantitative descriptive-correlational research design using survey questionnaires as the primary data-gathering instrument. Respondents included ISAL teachers from selected educational institutions in BARMM. Data were analyzed using appropriate statistical tools to determine levels, relationships, and significant findings related to ICT utilization in ISAL education. The findings revealed that teachers generally demonstrated adequate ICT competencies and positively perceived the role of ICT in improving classroom instruction, student participation, comprehension, motivation, and overall learning engagement. The study also found that the effectiveness of ICT integration depended on the availability of ICT facilities, stable internet connectivity, institutional support, stakeholder involvement, and continuous teacher training. Furthermore, positive relationships were identified between teachers' ICT competencies, access to technological resources, and improved instructional effectiveness and student learning outcomes. However, challenges such as limited infrastructure, inadequate technological resources, inconsistent internet access, and insufficient training opportunities constrained the full implementation of ICT in ISAL education. The study concluded that ICT utilization significantly enhances the quality of teaching and learning in ISAL education when supported by adequate infrastructure, institutional commitment, and teacher capability development. It recommended continuous ICT training programs, improved technological resources, enhanced internet connectivity, and stronger stakeholder collaboration to support effective ICT integration in educational institutions. This study supports Sustainable Development Goal (SDG) 4 on Quality Education by promoting inclusive and effective learning through technology integration. It also relates to SDG 9 on Industry, Innovation, and Infrastructure through the improvement of educational technological resources and digital learning systems. The sustainability impact of the study lies in strengthening institutional educational practices, improving digital teaching competencies, and supporting long-term educational development and accessibility in BARMM communities.

Keywords: Arabic Language, BARMM, ICT Competencies, ICT Integration, Islamic Studies, Learning Outcomes, Stakeholder Support, Teacher Training, Technological Resources

1. Introduction

The incorporation of ICT in education significantly improves teaching effectiveness, student engagement, motivation, and academic achievement (Higgins et al., 2012; van Braak, Tondeur, & Valcke, 2004). ICT also supports professional development by enabling collaboration, reflection, and lifelong learning among educators (Koh & Divaharan, 2011; Law, Yuen, & Chan, 2010). In the Philippine educational system, ICT integration has been encouraged through several government policies and initiatives (Diaz & Tan, 2015). Within BARMM, however, teachers continue to experience limited ICT literacy, inadequate infrastructure, and insufficient technical support, restricting effective technology integration in classrooms. Garcia (2019) and Santos (2021) identified barriers such as poor infrastructure, limited professional development opportunities, and inadequate access to ICT resources. These challenges are more pronounced in Islamic Studies and Arabic Language instruction where localized and culturally sensitive digital content remains scarce. The study focused on understanding how ICT competencies, adequacy of facilities, and stakeholder support influence ICT utilization in ISAL teaching and student learning outcomes. The research further sought to bridge the digital divide in Islamic education by promoting technology-enhanced pedagogical approaches that remain culturally and religiously appropriate.

Existing literature consistently highlights the positive effects of ICT on teaching and learning. ICT enhances collaborative learning, personalized instruction, learner motivation, and access to educational resources (Albirini, 2006; Tondeur et al., 2016; Kozma, 2005). Multimedia resources, online platforms, digital assessments, and interactive learning environments contribute to improved learner engagement and comprehension (Behera et al., 2018; Chen & Li, 2019; Mouza & Lavigne,

2012). Studies also emphasized the role of ICT in fostering critical thinking, creativity, communication, and problem-solving skills among learners (Khalid et al., 2021; Karsenti & Collin, 2019). In language learning, digital platforms and multimedia tools facilitate vocabulary retention, reading comprehension, pronunciation, and interactive learning experiences (Chapelle, 2001; Mayer, 2009). Despite these benefits, several challenges persist in ICT implementation. These include inadequate infrastructure, lack of technical support, insufficient teacher training, high costs of ICT maintenance, and unequal access to digital resources (Diaz & Tan, 2015; UNESCO, 2017; Albirini, 2006; Tondeur et al., 2016). Research further indicates that successful ICT integration requires not only technological resources but also pedagogical readiness, institutional leadership, and sustained stakeholder support (Hew & Brush, 2007; Ertmer & Ottenbreit-Leftwich, 2013). In Islamic education, ICT utilization supports the preservation of cultural heritage and improves access to education in geographically isolated areas (Kamarudin et al., 2020). However, studies also noted the continuing dependence on traditional teaching approaches in Islamic Studies and Arabic instruction, especially in contexts with limited technological capacity (Hashim, 2009; Kusain, 2022).

Globally, ICT integration has transformed educational systems by promoting digital literacy, interactive learning, and equitable access to knowledge (UNESCO, 2019; Selwyn, 2016). Countries across different regions have adopted digital learning initiatives to improve educational quality and learner preparedness for the digital age. Research from the Middle East, Africa, and Southeast Asia demonstrates the growing role of ICT in Arabic language learning and Islamic education (Al-Omari, 2019; Hussein, 2021; Rizky et al., 2020). Nationally, the Philippine government has implemented policies supporting ICT integration in education, including the National ICT in Education Plan 2021–2025 (Department of Education, 2021). However, disparities remain between urban and rural schools regarding ICT access, infrastructure, and teacher readiness. Locally, BARMM presents unique educational and socio-cultural conditions. Schools in the region often experience limited ICT infrastructure, inconsistent internet connectivity, and insufficient professional development opportunities for teachers. Moreover, the implementation of ICT in ISAL teaching requires sensitivity to Islamic values, language instruction, and culturally appropriate pedagogical approaches. These realities highlight the need for localized ICT interventions tailored to the educational context of BARMM.

The study was anchored on the Technological Pedagogical Content Knowledge (TPACK) Framework developed by Mishra and Koehler (2006). The framework emphasizes the integration of technological knowledge, pedagogical knowledge, and content knowledge to achieve effective technology-enhanced instruction. In the context of ISAL teaching, educators must possess expertise in Islamic Studies and Arabic Language content while effectively utilizing pedagogical strategies and ICT tools. The study also utilized Diffusion of Innovation Theory, which explains how innovations such as ICT are adopted within educational systems. Social Cognitive Theory highlighted the importance of self-efficacy, behavioral interaction, and environmental influences in technology utilization. Activity Theory further explained how ICT-mediated instructional activities shape teaching and learning experiences. Conceptually, the study examined ICT utilization in ISAL teaching in terms of ICT competencies, adequacy of ICT facilities, and stakeholder support as independent variables, while student learning outcomes in terms of knowledge, skills, and attitudes served as dependent variables. The framework proposed that higher ICT competencies, adequate facilities, and stronger stakeholder support contribute to improved ICT integration and student learning outcomes.

Although numerous studies have investigated ICT integration in subjects such as Science, Mathematics, and general education, limited research has focused specifically on ICT utilization in Islamic Studies and Arabic Language instruction. Existing literature largely overlooks culturally responsive and faith-sensitive approaches to ICT integration in Islamic education. Research in BARMM also remains limited, particularly regarding the experiences of ISAL teachers, the adequacy of ICT facilities, and the influence of stakeholder support on student learning outcomes. Prior studies mainly focused on general ICT adoption without examining the unique pedagogical and cultural requirements of Islamic education (SEAMEO INNOTECH, 2021). This study addressed these gaps by examining ICT utilization within the context of ISAL teaching in BARMM. It aimed to provide empirical evidence regarding teacher competencies, institutional readiness, and stakeholder involvement while contributing to the development of culturally appropriate ICT-based pedagogies for Islamic education.

The study aligns with several Sustainable Development Goals (SDGs). SDG 4 – Quality Education is directly addressed through the promotion of inclusive, equitable, and technology-enhanced learning opportunities. ICT integration supports improved instructional quality, learner engagement, and teacher professional development. SDG 9 – Industry, Innovation and Infrastructure is reflected in the emphasis on strengthening ICT infrastructure, digital learning platforms, and technological innovation in education. SDG 10 – Reduced Inequalities is relevant due to the study's focus on addressing the digital divide affecting geographically isolated and underserved schools in BARMM. SDG 17 – Partnerships for the Goals is evident in the role of stakeholder collaboration among schools, communities, parents, and educational institutions in supporting ICT integration initiatives. The study also indirectly supports SDG 16 – Peace, Justice, and Strong Institutions by strengthening educational systems and promoting culturally responsive education within Muslim communities.

The study contributes to multiple dimensions of sustainability. In terms of educational sustainability, the research promotes innovative and culturally relevant teaching approaches that enhance the quality of ISAL instruction and support long-term educational development. Regarding technological sustainability, the study encourages sustainable ICT integration through teacher training, infrastructure improvement, and digital resource development. For socio-economic sustainability, improved ICT competencies and digital literacy may help learners and educators adapt to the demands of the digital economy and contemporary workforce. The study also supports cultural sustainability by integrating technology into Islamic Studies and Arabic Language instruction while preserving religious identity, values, and cultural heritage. In relation to institutional sustainability, the findings may guide policymakers, school leaders, and educational institutions in developing strategic ICT policies, professional development programs, and resource allocation systems for BARMM schools. Finally, the study contributes to community sustainability by encouraging collaborative stakeholder engagement and equitable access to ICT-supported learning opportunities in underserved communities.

2. Material and methods

2.1 Research Design

The study utilized a descriptive-correlational research design. The descriptive component was used to determine the extent of ICT utilization, ICT competencies, adequacy of ICT facilities, stakeholder support, and student learning outcomes in ISAL instruction. The correlational component examined the relationships between ICT utilization variables and student learning outcomes. This design was appropriate because it allowed the researcher to systematically describe existing educational conditions and determine significant associations among variables without manipulating the study environment. Quantitative methods enabled objective measurement and statistical analysis of the data collected from respondents.

2.2 Locale of the Study

The study was conducted in selected schools within the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM), Philippines. The region is composed of areas with predominantly Muslim populations where Islamic Studies and Arabic Language are integrated into the educational curriculum. BARMM schools experience varying levels of ICT access, infrastructure availability, internet connectivity, and technological readiness. These conditions provided a suitable setting for examining ICT utilization in ISAL instruction and understanding the challenges and opportunities associated with technology integration in Islamic education.

2.3 Respondents of the Study

The respondents of the study consisted primarily of Islamic Studies and Arabic Language teachers teaching in selected schools within BARMM. These educators were directly involved in classroom instruction and ICT integration practices. The respondents were selected because they possessed firsthand experience regarding ICT utilization, access to technological resources, institutional support, and instructional practices in ISAL teaching. Their responses provided relevant information concerning the effectiveness of ICT integration and its relationship to student learning outcomes.

2.4 Sample and Sampling Procedure

The study employed an appropriate sampling technique to identify qualified teacher-respondents from selected schools in BARMM. The sampling process ensured that respondents met the criteria relevant to the objectives of the study, particularly their involvement in Islamic Studies and Arabic Language instruction and exposure to ICT utilization in teaching. The sample size was determined to obtain sufficient representation of ISAL teachers within the study area. Respondents were selected from schools with available ICT resources and established ISAL programs to ensure that the collected data reflected actual ICT integration practices in educational settings.

2.5 Research Instrument

The primary instrument used in the study was a structured survey questionnaire designed to measure ICT utilization in ISAL teaching. The questionnaire contained sections on teachers' ICT competencies, adequacy of ICT facilities, stakeholder support, and student learning outcomes. The instrument was adapted from related studies and literature on ICT integration in education and was validated by experts to ensure content validity and reliability. The questionnaire utilized appropriate rating scales to measure respondents' perceptions and experiences regarding ICT utilization in classroom instruction. The survey items were constructed to gather quantitative data on the extent of ICT integration, frequency of technology use, availability of ICT resources, and institutional support mechanisms. The instrument also examined the influence of ICT utilization on student knowledge, skills, and attitudes.

2.6 Data Gathering Procedure

Prior to data collection, the researcher secured the necessary permissions and approvals from appropriate school authorities and educational institutions. Respondents were informed about the objectives and significance of the study, and their participation was requested voluntarily. The survey questionnaires were distributed to selected teacher-respondents through

appropriate channels. Respondents were given sufficient time to accomplish the instruments, after which the completed questionnaires were retrieved for data processing and analysis. The researcher ensured confidentiality, anonymity, and ethical handling of all collected information throughout the conduct of the study.

2.7 Data Analysis Techniques

The data gathered were organized, tabulated, and analyzed using appropriate statistical tools. Descriptive statistics such as frequency counts, percentages, weighted means, and standard deviations were used to describe ICT competencies, adequacy of ICT facilities, stakeholder support, and student learning outcomes. Inferential statistical techniques were employed to determine significant relationships among the variables of the study. Correlation analysis was used to examine the association between ICT utilization variables and student learning outcomes. Statistical analyses provided empirical evidence regarding the extent and effectiveness of ICT integration in ISAL teaching.

2.8 Ethical Considerations

The study observed ethical standards throughout the research process. Respondents participated voluntarily and were informed about the purpose, procedures, and significance of the study. Confidentiality and anonymity of responses were strictly maintained, and collected data were used solely for academic and research purposes. The researcher ensured that respondents were treated with respect and that no harm, coercion, or undue influence occurred during data collection.

3. Results and Discussion

3.1 ICT Utilization in ISAL Teaching

3.1.1 Teachers' ICT Competencies

The findings revealed that ISAL teachers generally demonstrated a moderate to high level of ICT competency in classroom instruction. Most respondents were capable of using computers, multimedia presentations, internet resources, and communication platforms to support teaching and learning. However, some teachers experienced difficulties in advanced ICT applications and integrating technology consistently into instructional activities. These results suggest that teachers possess foundational technological skills necessary for ICT integration, although continuous professional development remains necessary to improve advanced competencies. The findings support studies emphasizing that teacher competency significantly influences effective ICT integration in education. Teachers who are technologically competent are more capable of creating interactive and learner-centered instructional environments, which positively affect student engagement and achievement.

3.1.2 Adequacy of ICT Facilities

The results showed that ICT facilities in the selected schools were moderately adequate. Some schools had access to computers, projectors, internet connectivity, and other digital learning tools, while others experienced shortages of equipment and unstable internet access. The uneven distribution of ICT resources affected the consistency of technology integration in ISAL instruction. The findings indicate that infrastructure remains a major factor influencing ICT utilization in schools. Limited access to ICT resources constrains teachers' ability to maximize technology in instruction and restricts students' opportunities for digital learning experiences. Previous studies have emphasized that adequate technological infrastructure is essential for successful ICT integration and improved educational outcomes.

3.1.3 Stakeholder Support for ICT Integration

The study found that stakeholder support, including assistance from school administrators, government agencies, parents, and the community, was generally present but varied across schools. Respondents acknowledged administrative encouragement and some institutional efforts to improve ICT access and teacher training. However, insufficient funding and limited technical support remained concerns among teachers. These findings imply that stakeholder participation plays a significant role in sustaining ICT integration in ISAL education. Administrative and institutional support can motivate teachers to adopt innovative teaching practices and enhance technology-based learning. The results are consistent with literature emphasizing collaborative support systems as critical factors in successful educational technology implementation.

3.2 Student Learning Outcomes

3.2.1 Effects of ICT Utilization on Student Learning

The findings indicated that ICT utilization positively influenced student learning outcomes in Islamic Studies and Arabic Language instruction. Teachers observed improvements in student participation, comprehension, motivation, and classroom interaction when ICT tools were incorporated into lessons. Multimedia resources and digital instructional materials enhanced students' understanding of complex concepts and encouraged active engagement. These results suggest that ICT integration contributes to a more interactive and effective learning environment. Technology-based instruction can increase learner motivation and improve academic performance by making lessons more accessible, engaging, and student-centered. The findings align with studies showing that ICT enhances communication, collaboration, and knowledge retention among learners.

3.2.2 Student Engagement and Participation

The results further revealed that students became more attentive and participative during ICT-supported lessons. The use of videos, presentations, online resources, and interactive activities encouraged learners to participate actively in classroom discussions and learning tasks. The increased engagement may be attributed to the interactive nature of ICT tools, which stimulate learners' interest and accommodate different learning styles. Previous literature has emphasized that technology integration enhances classroom interaction and creates more dynamic educational experiences that support learner participation and motivation.

3.3 Relationship Between ICT Utilization and Student Learning Outcomes

The study established a significant relationship between ICT utilization variables and student learning outcomes. Teachers with higher ICT competencies and schools with more adequate ICT facilities tended to report better student performance and engagement in ISAL instruction. Similarly, stronger stakeholder support was associated with more effective ICT integration and improved educational experiences. These findings indicate that successful ICT integration depends on the combined influence of teacher capability, technological infrastructure, and institutional support. Effective utilization of ICT can enhance instructional quality and contribute positively to student achievement. The results support existing literature emphasizing that technology integration in education becomes more effective when supported by competent educators, sufficient resources, and collaborative institutional efforts.

3.4 Challenges Affecting ICT Utilization

The findings identified several challenges affecting ICT integration in ISAL teaching, including limited ICT facilities, unstable internet connectivity, insufficient teacher training, lack of technical support, and inadequate funding. Some respondents also reported difficulties in adapting instructional materials for digital platforms and maintaining consistent technology use in classrooms. These challenges suggest that barriers to ICT integration remain significant in some educational settings within BARMM. Addressing these issues requires continuous investment in infrastructure, teacher capacity-building programs, and institutional support mechanisms. Literature on educational technology consistently highlights that overcoming technological and organizational barriers is necessary to achieve sustainable and effective ICT integration in schools.

3.5 Overall Implications of the Findings

Overall, the findings demonstrated that ICT utilization has a positive influence on teaching and learning in Islamic Studies and Arabic Language education. While teachers generally exhibited adequate ICT competencies and recognized the benefits of technology integration, limitations in facilities and institutional support affected the extent of ICT implementation. The study highlights the importance of strengthening teacher training, improving ICT infrastructure, and enhancing stakeholder collaboration to maximize the educational benefits of technology integration. These findings reinforce the growing recognition of ICT as an essential component of modern education and as a valuable tool for improving instructional effectiveness and student learning outcomes in ISAL education.

4. Conclusion & Recommendations

The study concluded that ICT utilization significantly contributes to improving the teaching and learning process in Islamic Studies and Arabic Language (ISAL) education in BARMM. The findings showed that teachers generally possessed adequate ICT competencies and recognized the value of technology integration in enhancing student participation, comprehension, motivation, and classroom interaction. However, the effectiveness of ICT implementation was influenced by the availability of ICT facilities, stakeholder support, internet connectivity, and access to continuous teacher training. The study further established that stronger ICT competencies, adequate technological resources, and institutional support were positively associated with better student learning outcomes and more effective instructional delivery in ISAL education.

Based on the findings, the study recommends strengthening ICT integration in ISAL education through continuous teacher training programs, improved ICT infrastructure, and enhanced stakeholder support. Educational institutions and relevant government agencies should provide adequate technological resources, stable internet connectivity, and technical assistance to support effective ICT implementation in schools. School administrators and stakeholders should also promote collaborative efforts that encourage teachers to maximize the use of ICT in instruction to improve student engagement and learning outcomes in Islamic Studies and Arabic Language education.

Compliance with ethical standards

The authors declare no conflict of interest. This study complied with recognized ethical standards for human-participant research by ensuring voluntary participation with informed consent, the right to withdraw without penalty, and strict confidentiality through anonymous, secure, and aggregated data handling. Given the focus on psychological well-being,

procedures were non-invasive, and safeguards were observed to minimize discomfort, with guidance to appropriate support services when needed, and required institutional permissions were secured for instrument use and access to academic records.

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