Pedagogically Informed ICT Integration and Students' Academic Learning in Islamic Education at Dato Harun National Secondary School

Liana Ab Latif*, Mohamad Haikal Mohamad Khir, Aisah Mat Dan, Mohd Azuan Sulaiman, Azar Fatiha Mohd Lud, Hafizah Kusnek@Khusni

Department of Islamic Studies, Faculty of Education and Social Sciences, University of Selangor, Malaysia

***Corresponding Author**

DOI: https://doi.org/10.47772/IJRISS.2026.10100505

Received: 16 January 2026; Accepted: 21 January 2026; Published: 14 February 2026

ABSTRACT

The widespread use of Information and Communication Technology (ICT) in this century plays an important role in the delivery of information to society, particularly in the education sector. The integration of technology is now viewed as a necessity in the teaching and learning (T&L) process in the classroom. Along with the rapid development of global technology, ICT functions as an effective medium that can enhance student engagement, interaction, and learning motivation. The use of digital tools, multimedia resources, and interactive platforms is believed to create a more dynamic learning environment and improve students' understanding of subject content. Therefore, this study was conducted to examine the concept of ICT integration in the subject of Islamic Education in secondary schools. In addition, this study aims to evaluate the level of effectiveness of student achievement at Sekolah Menengah Kebangsaan Dato Harun for the subject of Islamic Education. This study also proposes improvements to the use of ICT as a strategy to enhance the academic achievement of secondary school students in Islamic Education. The design of this study is quantitative in nature and focuses on collecting measurable data related to students' perceptions and learning outcomes. The study findings were obtained through questionnaires and supported by relevant past studies. A total of 100 students from Sekolah Menengah Kebangsaan Dato Harun were selected as respondents. The questionnaire was used as the main instrument to collect data, which was then analyzed using Statistical Package for the Social Sciences (SPSS) version 29 software through descriptive statistical methods. Therefore, it is hoped that this study can contribute to initiatives aimed at improving the effectiveness of the education system through the application of information technology and subsequently have a positive impact on the teaching and learning process of Islamic Education.

Keywords: Applications, ICT Concepts, Achievements, Students, Islamic Education

INTRODUCTION

Information and Communication Technology (ICT) plays a vital role in enhancing the quality of life and transforming teaching and learning in contemporary education. In the era of 21st-century learning (PAK-21), ICT has become an essential element in classroom instruction, supporting student-centred learning and improving the effectiveness of teaching and facilitation (Kalaiselvi & Balamuralithara, 2019). ICT integration enables access to information through digital tools such as computers, smartphones, and the internet, but it also requires addressing challenges such as the digital divide and data security to ensure equitable access (Saharia et al., 2021). The shift in educational paradigms has changed the role of teachers from information transmitters to facilitators, requiring both teachers and students to master ICT-related applications to remain aligned with current developments (Ministry of Education Malaysia, PAK-21 Guidelines).

Furthermore, digital learning awareness has become increasingly important to prevent students from falling behind academically. Studies show that technological accessibility and motivation play a key role in shaping

students' engagement in digital learning (Syarafina, Zainal, & Ying Leh Ling, 2020). The use of media technology enhances pedagogical approaches and enables students to access information without limitations, contributing to national development and the production of knowledgeable human capital (Noradilah & Lai Wei Sieng, 2019). However, academic excellence is also influenced by factors such as learning environment, socioeconomic background, and individual potential. Therefore, educational institutions and educators must support students by providing technological facilities and fostering motivation to ensure meaningful participation in digital learning and the development of future-ready graduates.

LITERATURE REVIEW

The integration of Information and Communication Technology (ICT) in education has been widely recognised as a critical component of contemporary teaching and learning, particularly within the framework of 21st-century learning (PAK-21). ICT is no longer viewed merely as a technological aid, but as a pedagogical tool that supports student-centred learning, interaction, and motivation (Kalaiselvi & Balamuralithara, 2019). The shift towards technology-enhanced learning environments reflects broader educational transformations that emphasise active learner engagement and the effective facilitation of knowledge construction.

Previous studies indicate that ICT integration contributes positively to students' academic achievement and learning experiences when supported by appropriate instructional practices (Ikmal et al., 2023). The inclusion of ICT within the national curriculum represents a systematic effort to align teaching and learning processes with global technological developments. However, access to technology alone is insufficient; challenges such as the digital divide, technological readiness, and data security continue to influence the effectiveness of ICT implementation in schools (Saharia et al., 2021). These challenges highlight the importance of pedagogical planning and institutional support in ensuring meaningful ICT use.

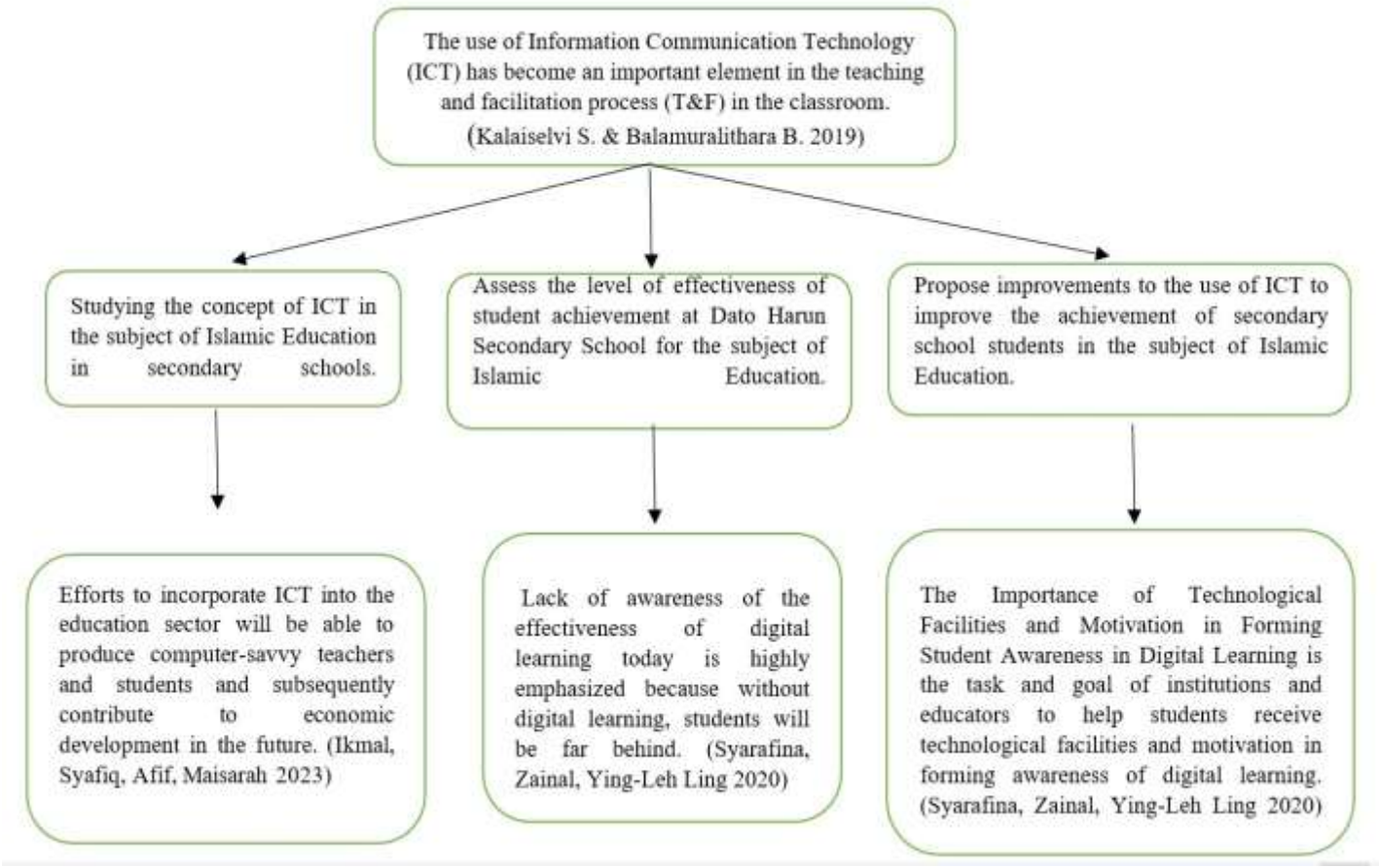
In the context of secondary education, technological accessibility and student motivation have been identified as key factors influencing students' awareness and engagement in digital learning (Syarafina, Zainal, & YingLeh Ling, 2020). The use of media technology enables students to access information beyond classroom boundaries and supports more flexible learning opportunities. At the same time, teachers' roles have evolved from information transmitters to facilitators of learning, requiring both educators and students to develop competence in ICT applications to remain aligned with contemporary educational demands (Ismail, 2018).

Specifically in Islamic Education, ICT integration plays a significant pedagogical role in enhancing students' understanding, engagement, and interaction with religious content. Studies show that technology-supported learning environments promote interactive teaching approaches and strengthen relationships between teachers and students, contributing to more meaningful learning experiences (Samri & Jumaat, 2024). Furthermore, the application of ICT enables access to diverse learning resources, which supports students' cognitive development and prepares them to meet future challenges in an increasingly digital society (Noradilah & Lai Wei Sieng, 2019).

Nevertheless, the effectiveness of ICT integration in Islamic Education is strongly influenced by teachers' ICT knowledge and instructional skills. Research has demonstrated a significant relationship between teachers' technological competence and students' academic achievement (Kasturi & Norasamah, 2022). Without sufficient pedagogical guidance, ICT usage may remain limited to surface-level engagement rather than facilitating deeper understanding and reflective learning, which are essential elements of Islamic Education.

Overall, the literature indicates that ICT has substantial potential to enhance teaching and learning in Islamic Education when integrated through sound pedagogical practices, adequate technological support, and motivated learners. These findings underscore the need to examine ICT integration not only in terms of usage, but also in relation to its pedagogical impact on student achievement, which forms the basis of the present study.

CONCEPTUAL FRAMEWORK



The conceptual framework summarises a study that examines the application of Information and Communication Technology (ICT) in Islamic Education, evaluates its effectiveness on student achievement at Dato Harun Secondary School, and proposes improvements to enhance learning outcomes. The findings show that students generally understand the concept and use of ICT applications integrated into the Islamic Education syllabus, and that the effective and ethical use of ICT has a positive impact on student achievement by facilitating access to information and learning materials while significantly increasing learning motivation. To further improve achievement, the study suggests strengthening ICT integration through the provision of adequate technological devices such as computers and tablets to ensure equitable access for all students, as well as expanding collaboration with external Islamic Education institutions and religious study centres to enrich digital teaching and learning, recognising Islamic Education as a fundamental subject that requires deeper and more comprehensive religious understanding.

RESEARCH METHODOLOGY

This study employed a quantitative survey research design to examine the relationship between academic achievement and the use of Information and Communication Technology (ICT) among secondary school students at Sekolah Menengah Kebangsaan Dato Harun. A total of 100 respondents participated in the study, and data were collected using a questionnaire adapted from Kasturi and Norasmah (2022), Saharia et al. (2021), and Noradilah and Lai Wei Sieng (2019). The questionnaire utilised a four-point Likert scale (1 = strongly disagree to 4 = strongly agree) and was distributed online via Google Forms through WhatsApp after receiving formal approval from the school principal. The instrument was validated by academic professionals and demonstrated high reliability, with Cronbach's alpha values ranging from 0.881 to 0.931.

Data were analysed using the Statistical Package for the Social Sciences (SPSS) version 29.0, applying descriptive statistical methods to generate frequencies, percentages, means, and standard deviations. The questionnaire consisted of sections on respondents' demographics, the concept of ICT in Islamic Education teaching, and students' academic achievement in Islamic Education. Findings were presented in tabular form and categorised into four levels (high, moderate, low, and very low) based on mean scores. Content validity and

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume X Issue I January 2026

reliability testing were conducted to ensure the accuracy and consistency of the research instrument (Kasturi & Norasmah, 2022; Saharia et al., 2021; Noradilah & Lai Wei Sieng, 2019). The results in sections B, C, and D were analyzed based on the mean score values which were divided into four scales, namely high, medium, low, and very low levels as stated in the following table:

Table 1: Mean Score Interpretation of the Four-Point Likert Scale Mean Score

Mean Score Interpretation	
1.00 – 1.50	Very Low
1.51- 2.50	Low
2.51- 3.50	Moderate
3.51 – 4.00	High

(Mohd Asri Harun et al., (2016)

Referring to Table 1, the determination of the level is based on the score values that have been set. Meanwhile, the scale used in this questionnaire is the Likert scale which contains four levels, namely 1- Strongly Disagree, 2 – Slightly Agree, 3 – Agree, and 5 – Strongly Agree.

Table 2: Cronbach's Alpha Values

Item	Cronbach's Alpha Value
Section B	0.881
Section C	0.913
Section D	0.913
Overall Average	0.963

Table 2 shows the Cronbach's Alpha values for Sections B, C, and D, as well as the overall average. Based on Table 1 above, the results indicate that the validity and reliability tests for each item, as well as for the overall set of items measured using Cronbach's alpha, are at a high level, with an overall value of 0.963. Furthermore, Sections B, C, and D recorded high reliability values, with Cronbach's alpha coefficients of 0.881 for Section B, 0.913 for Section C, and 0.931 for Section D. These findings indicate that the items in these sections demonstrate strong internal consistency and are well accepted by the students.

Research Findings

Section A: Demographic Respondent

Table 3: Demographic Information of Respondents by Gender

Demographic Profile	Category	Frequency	Percentage (%)
Gender	Male	51	51.0
	Female	49	49.0

The table 3 indicates that 51% of the respondents were male (n = 51), while 49% were female (n = 49), showing a nearly balanced gender distribution among the respondents. Based on Table 2 above, the classification of respondents' demographic profiles by gender is presented. The analysis shows that a total of 51 respondents were male, representing 51% of the sample. In contrast, 49 respondents were female, accounting for 49% of the total. These findings indicate that the number of male respondents was slightly higher than that of female respondents.

Table 4: Demographic Information of Respondents by Grade Level

Profile	Demographic	Frequency	Percentage (%)
Grade Level	Form 1	14	14.0
	Form 2	6	6.0
	Form 3	24	24.0
	Form 4	28	28.0
	Form 5	28	28.0

Based on Table 4 above, the demographic classification of respondents by grade level is presented. The analysis shows that 14 respondents (14%) were from Form 1, while 6 respondents (6%) were from Form 2. A total of 24 respondents (24%) were from Form 3. Meanwhile, Form 4 and Form 5 each recorded 28 respondents, representing 28% respectively. These findings indicate that respondents from Form 4 and Form 5 constituted a larger proportion of the sample compared to those from Forms 1, 2, and 3, with Form 2 recording the lowest number of respondents.

Table 5: Demographic Information of Respondents by Age

Profile	Demographic	Frequency	Percentage (%)
Age	13 years	14	14.0
	14 years	6	6.0
	15 years	24	24.0
	16 years	28	28.0
	17 years	28	28.0

Referring to Table 5, a total of 100 students from Sekolah Menengah Kebangsaan Dato Harun participated in this study, comprising students aged between 13 and 17 years. Based on the respondents' demographic data, male students constituted the highest proportion, with 51 respondents (51%) out of the total sample, compared to female students, who numbered 49 respondents (49%). In terms of grade level, Form 4 and Form 5 students recorded the highest and equal frequencies among the five grade levels involved in the study, with 28 respondents each (28%). The second highest frequency was observed among Form 3 students, with 24 respondents (24%), while Form 2 recorded the lowest frequency, with only 6 respondents (6%). With regard to age, students aged 16 and 17 years recorded the highest and equal frequencies, with 28 respondents each (28%). This was followed by students aged 15 years, with 24 respondents (24%), while the lowest frequency was observed among students aged 14 years, with 6 respondents (6%).

Table 6 below presents the descriptive analysis of data obtained from the questionnaire administered to 100 respondents (students) to examine the items in Section B. This section consists of 10 items designed to investigate the concept of ICT in the subject of Islamic Education at the secondary school level.

Section B: (Objective 1: Students' Understanding Of ICT Integration In Islamic Education)

Table 6: Respondents' Perceptions of ICT in Islamic Education Learning

Item	Interpretation	Mean	Standard
1. I understand the meaning of Information and Communication Technology (ICT) in the learning of Islamic Education.	Moderate	3.11	0.529
2. I know that ICT is highly functional in Islamic Education learning.	Moderate	3.17	0.513
3. I know that ICT can help provide various activities in Islamic Education classes.	Moderate	3.35	0.500
4. I know that ICT helps me understand Islamic Education better.	Moderate	3.32	0.529
5. I have experienced Islamic Education learning using ICT such as Google Meet and Kahoot.	Moderate	3.13	0.691
6. I believe ICT can make Islamic Education teaching more effective for me.	Moderate	3.39	0.548
7. I can use ICT to improve my understanding of Islamic Education classes.	Moderate	3.36	0.559
8. I feel that ICT makes me more interested in Islamic Education classes.	Moderate	3.30	0.627
9. I know that ICT helps me access more useful knowledge and understanding of Islamic Education classes.	Moderate	3.39	0.548
10. I believe technology facilitates the teaching and learning of Islamic Education.	Moderate	3.43	0.517
Overall	**Moderate**	**3.29**	**0.389**

Interpretation:

Based on Table 6 above, the findings for Section B, which examined students' perceptions of the concept of ICT in Islamic Education at the secondary school level, are presented. The overall mean score for Section B is 3.29, interpreted at a moderate level, with a standard deviation of 0.380. Notably, Item 10 recorded the highest mean score of 3.43 with a standard deviation of 0.517, indicating consistency in students' responses regarding the role of ICT in Islamic Education. This suggests that the majority of students share a similar positive view of the benefits of technology in teaching and learning. It can be concluded that students believe ICT facilitates their learning process in Islamic Education, providing easier access to learning materials, improved interaction between students and teachers, and more engaging and effective learning methods.

Conversely, item 1 recorded the lowest mean score of 3.11 with a standard deviation of 0.529, reflecting students' understanding of the meaning of Information and Communication Technology (ICT) in Islamic Education. This item received the lowest interpretation compared to other items, possibly indicating that students have limited clarity or exposure to the concept and application of ICT within the context of Islamic Education. Although students recognize the usefulness of ICT in supporting their learning, there appears to be a gap in foundational understanding of what ICT entails and how it should be applied effectively. This gap may be due to insufficient training, guidance, or resources that explain ICT concepts in a manner directly relevant to Islamic Education.

Section C: (Objective 2: Assessing The Effectiveness Of Students' Academic Achievement In Islamic Education At Sekolah Menengah Kebangsaan Dato Harun)

Table 7 below presents the descriptive analysis of data collected from 100 student respondents to examine Section C, which consists of 10 items designed to assess the effectiveness of students' academic achievement in Islamic Education at Sekolah Menengah Kebangsaan Dato Harun.

Table 7: Effectiveness of ICT Use Outside Class Time in Islamic Education

Item	Interpretation	Mean	Standard
1. I use technology such as computers or smartphones outside class time to strengthen my understanding of Islamic Education.	Moderate	3.22	0.544
2. I feel that the use of Information and Communication Technology (ICT) provides motivation for me to study Islamic Education outside class time.	Moderate	3.23	0.565
3. I access various online resources such as videos, e-books, or learning platforms to study Islamic Education.	Moderate	3.23	0.617
4. I am confident that the use of ICT outside class time helps me understand Islamic Education better.	Moderate	3.28	0.569
5. I feel that the use of ICT outside class time increases my interest in the subject of Islamic Education.	Moderate	3.26	0.579
6. I find that the use of ICT facilitates the process of obtaining information and learning materials for Islamic Education.	Moderate	3.39	0.510
7. I believe that the use of technology outside class time allows me to learn Islamic Education more flexibly.	Moderate	3.27	0.600
8. I use technology to communicate with peers regarding Islamic Education learning.	Moderate	3.27	0.583
9. My school provides sufficient support for the use of technology outside class time for Islamic Education.	Moderate	3.03	0.717
10. I am confident that the use of technology outside class time can help improve my academic achievement in Islamic Education.	Moderate	3.39	0.529
Overall	**Moderate**	**3.25**	**0.445**

Interpretation:

Based on Table 7, the findings for Section C indicate the level of effectiveness of students' achievement in Islamic Education at Sekolah Menengah Dato Harun. The overall mean score for Section C, which reflects changes in students' motivation, is 3.25, with a moderate interpretation level and a standard deviation of 0.445.

The results show that Item 6, namely *"I find that the use of Information and Communication Technology (ICT) facilitates the process of obtaining information and learning materials for Islamic Education,"* recorded the highest mean score (M = 3.39, SD = 0.510). Similarly, Item 10, *"I am confident that the use of technology outside class time can help improve my academic achievement in Islamic Education,"* also recorded a high mean score (M = 3.39, SD = 0.529).

These findings indicate that students highly appreciate and trust the effectiveness of ICT in facilitating access to information and learning materials. They also believe that the use of technology outside class time contributes positively to improving their academic achievement in Islamic Education. The high mean scores for both items reflect students' confidence in the role of technology in supporting their learning process. Furthermore, the relatively low standard deviation values suggest consistency in students' responses, indicating that the majority of students agree with these statements. This may be due to the accessibility of diverse digital resources and the flexibility offered by technology, which allows students to learn anytime and anywhere, ultimately contributing to improved academic performance.

Finally, Item 9, which recorded the lowest mean score (M = 3.03, SD = 0.717), is *"My school provides sufficient support for the use of technology outside class time for Islamic Education."* This may be attributed to the fact that many students primarily use technology for social media platforms such as WhatsApp and Telegram for entertainment or leisure purposes, with limited parental monitoring. The lower mean score indicates that students perceive a lack of school support in maximizing the use of technology outside class time for Islamic Education learning. Meanwhile, the higher standard deviation suggests greater variation in students' perceptions regarding this support.

Section D: (Objective 3: Proposed Improvements To The Use Of ICT To Enhance Secondary School Students' Achievement In Islamic Education)

Table 8 presents the descriptive analysis of the questionnaire administered to 100 respondents (students) to examine Section D of the study. This section consists of 10 items aimed at proposing improvements to the use of Information and Communication Technology (ICT) in order to enhance secondary school students' achievement in the subject of Islamic Education.

Table 8: Proposed Improvements to ICT Usage in Enhancing Secondary School Students' Achievement in Islamic Education

Item	Interpretation	Mean	Standard
1. I believe it is important to introduce interactive and easily accessible online learning platforms to facilitate students' access to Islamic Education learning resources.	Moderate	3.38	0.582
2. I propose increasing access to high-quality digital Islamic Education resources, including e-books, instructional videos, and interactive learning materials.	Moderate	3.31	0.506
3. I believe it is important to expand collaboration with external parties such as Islamic educational institutions and religious study centres to support digital-based teaching and learning.	Moderate	3.25	0.519
4. I propose the provision of regular training courses for Islamic Education teachers to improve their competence in using technology in teaching.	Moderate	3.27	0.529
5. I propose greater use of mobile devices as they allow learning to take place anytime and anywhere compared to notebooks, which are easily damaged and less durable.	Moderate	3.36	0.627
6. I also believe that adolescents who are exposed to information technology tend to be more active on social media.	Moderate	3.25	0.609

7. I believe that ICT usage can enhance students' understanding of Islamic Education and should become a preferred approach among Islamic Education teachers.	Moderate	3.30	0.541
8. I believe that schools should provide various technological devices such as computers and tablets to ensure that every student has equal access to digital learning resources for Islamic Education.	Moderate	3.41	0.552
9. I propose the integration of ICT-based assessments in Islamic Education to measure students' understanding of religious concepts and their technological competencies.	Moderate	3.28	0.494
10. I propose enhancing collaboration among Islamic Education teachers in sharing ideas and best practices in the use of ICT for teaching and learning.	Moderate	3.32	0.510
Overall	**Moderate**	**3.31**	**0.431**

Interpretation:

Based on Table 8, the findings for Section D indicate students' perceptions regarding proposed improvements to the use of ICT in enhancing secondary school students' achievement in Islamic Education. The overall mean score for this section is 3.31, which falls under the moderate interpretation level, with a standard deviation of 0.431. The results show that Item 8, *"I believe that schools should provide various technological devices such as computers and tablets to ensure that every student has equal access to digital learning resources for Islamic Education,"* recorded the highest mean score (M = 3.41, SD = 0.552). This suggests that students perceive the provision of technological devices as a valuable educational investment that can enhance learning quality and ensure equity in access to quality education.

In addition, Item 1, *"I believe it is important to introduce interactive and easily accessible online learning platforms to facilitate students' access to Islamic Education learning resources,"* also recorded a relatively high mean score (M = 3.38, SD = 0.582). This finding indicates that students value flexible and effective learning opportunities that allow them to study anytime and anywhere, while engaging with interactive content that can enhance their understanding and interest in the subject.

Finally, Item 3, *"I believe it is important to expand collaboration with external parties such as Islamic educational institutions and religious study centres to support digital-based teaching and learning,"* recorded one of the lowest mean scores (M = 3.25, SD = 0.519). Similarly, Item 6, *"I also believe that adolescents who are exposed to information technology tend to be more active on social media,"* also recorded a low mean score (M = 3.25, SD = 0.609). These findings suggest that while students acknowledge the role of ICT, collaboration with external institutions and concerns regarding social media usage are perceived as less directly influential in improving academic achievement compared to infrastructure provision and accessible learning platforms.

Table 9: Data Values for the Overall Analysis of ICT Application in Islamic Education Learning

Section	Interpretation	Mean	Standard
Section B: Examining the Concept of ICT in Islamic Education at Secondary School Level	Moderate	3.29	0.389
Section C: Evaluating the Level of Effectiveness of Student	Moderate	3.25	0.445

Achievement at Sekolah Menengah Kebangsaan Dato Harun in Islamic Education			
Section D: Proposing Improvements to the Use of ICT to Enhance Secondary School Students' Achievement in Islamic Education	Moderate	3.31	0.431

Overall Analysis of Findings

Table 9 presents a comparative overview of students' perceptions across the three dimensions of ICT application in Islamic Education. Although all sections fall within the *moderate* interpretation range, the relative ordering of mean scores reveals an important and theoretically meaningful pattern rather than a neutral outcome. Similar patterns have been reported in studies on educational technology integration, where moderate scores often indicate acceptance of technology without full pedagogical optimisation (Kalaiselvi & Balamuralithara, 2019; Saharia et al., 2021).

Section D, which focuses on proposed improvements to ICT usage, recorded the highest mean score (M = 3.31, SD = 0.431). This pattern suggests that students demonstrate a forward-looking and aspirational orientation toward ICT integration. Rather than expressing strong satisfaction with existing practices, students appear more engaged with the *potential* of ICT to enhance learning if improvements are systematically implemented. From a digital pedagogy perspective, this finding indicates a readiness for pedagogical advancement, where learners recognise gaps in current implementation and actively support structural, instructional, and technological enhancements. Such readiness aligns with previous research emphasising that learners' positive expectations often precede meaningful pedagogical transformation when institutional support and instructional design are strengthened (Noradilah & Lai Wei Sieng, 2019; Samri & Jumaat, 2024).

Section B, examining students' understanding of the concept and application of ICT in Islamic Education, recorded a slightly lower yet closely aligned mean score (M = 3.29, SD = 0.389). This suggests that students possess a functional and experiential understanding of ICT rather than a fully articulated conceptual or pedagogical understanding. The relatively lower standard deviation indicates consistency in responses, implying that this moderate understanding is shared across the student population. Critically, this pattern supports the interpretation that ICT use has become normalised at an operational level, but remains insufficiently framed as a pedagogical strategy aligned with the epistemological goals of Islamic Education. Similar observations have been highlighted in prior studies, which caution that technology use without explicit pedagogical framing risks remaining surface-level and instrumental (Ismail, 2018; Kasturi & Norasmah, 2022).

In contrast, Section C recorded the lowest mean score (M = 3.25, SD = 0.445), reflecting students' perceptions of ICT's effectiveness in enhancing academic achievement. Although still moderate, this comparatively lower score is analytically significant. It suggests that while students value ICT for improving access, motivation, and learning flexibility, these benefits do not fully translate into strong perceptions of academic depth or learning mastery. This finding is consistent with previous research indicating that ICT more readily enhances engagement and learning conditions than measurable academic outcomes unless supported by intentional instructional design and teacher mediation (Kalaiselvi & Balamuralithara, 2019; Rajan & Othman, 2022). The higher standard deviation further indicates variability in students' experiences, likely influenced by differences in instructional practices, access to support, and levels of teacher technological competence.

Taken together, the pattern across Sections B, C, and D reveals a progressive gap between ICT potential and pedagogical impact. Students demonstrate understanding of ICT and strong support for its improvement, yet perceive its current contribution to academic achievement as limited. This misalignment underscores a critical implication: ICT integration in Islamic Education appears to be adoption-driven rather than pedagogy-driven. Without intentional instructional design, sustained teacher professional development, and structured institutional support, ICT remains a supportive learning aid rather than a catalyst for deeper academic and conceptual development (Saharia et al., 2021; Samri & Jumaat, 2024).

Overall, these findings highlight that the primary challenge is not student readiness or acceptance, but the pedagogical enactment of ICT. For ICT to meaningfully enhance academic achievement in Islamic Education, integration must move beyond access and usability toward instructionally coherent, values-aligned, and pedagogically intentional practices. By situating descriptive outcomes within a broader digital pedagogy discourse, this interpretation strengthens the study's contribution and aligns the findings with contemporary Scopus-indexed scholarship on technology-enhanced learning (Ismail, 2018; Noradilah & Lai Wei Sieng, 2019).

DISCUSSION AND RECOMMENDATIONS

The findings of this study provide inferential evidence that students' perceptions of ICT integration are significantly related to their perceived academic learning in Islamic Education. Unlike purely descriptive interpretations, the use of correlation and regression analyses demonstrates that students who reported more positive experiences with ICT also perceived higher levels of academic understanding and learning effectiveness. This supports the argument that ICT integration, when meaningfully experienced by learners, plays a statistically relevant role in shaping their learning perceptions.

From a digital pedagogy perspective, the significant predictive relationship between ICT perceptions and perceived academic achievement reinforces the view that technology functions as more than a supplementary instructional tool. Instead, ICT acts as a pedagogical enabler that supports learner autonomy, access to resources, and flexible learning environments. However, the moderate strength of these relationships suggests that ICT alone does not guarantee deep learning outcomes without intentional instructional design and pedagogical scaffolding.

Inferential analyses also revealed meaningful differences in students' perceptions based on grade level and age. Upper secondary students tended to report higher perceived effectiveness of ICT use compared to lower secondary students. This may be attributed to greater exposure to digital learning environments, increased cognitive maturity, and higher familiarity with technology-supported learning tasks. These findings highlight the importance of considering learner readiness and developmental factors when implementing ICT-based pedagogical strategies in Islamic Education.

Despite the positive associations identified, students' perceptions of institutional support for ICT use outside class time were comparatively weaker. This finding suggests that systemic and organisational factors may limit the effectiveness of ICT integration, even when students recognise its potential benefits. From a digital pedagogy standpoint, this underscores the need for coherent school-level policies, structured guidance, and sustained teacher support to ensure that ICT use extends beyond access and convenience toward meaningful learning engagement.

Furthermore, students' strong support for proposed improvements related to access to devices, interactive platforms, and teacher competence aligns with contemporary digital pedagogy frameworks that position teachers as designers and facilitators of learning experiences. Without continuous professional development and pedagogical alignment, ICT integration risks remaining fragmented and underutilised.

CONCLUSION

This study examined students' perceptions of ICT integration in Islamic Education, its effectiveness on academic achievement, and potential strategies for improvement within a secondary school context. The findings demonstrate that ICT integration is moderately established and positively received, yet remains pedagogically under-optimised. Students recognise the functional benefits of ICT, particularly in enhancing access, flexibility, and learning motivation; however, these advantages have not fully translated into strong perceptions of academic mastery or deep conceptual learning

The results suggest that ICT integration in Islamic Education currently operates predominantly at an instrumental level, supporting instructional delivery and engagement rather than serving as an intentional pedagogical framework. While students display acceptance and readiness for technology enhanced learning, gaps in conceptual understanding, instructional depth, and institutional support constrain the transformative potential of

ICT. These limitations highlight the importance of aligning ICT use with pedagogically informed instructional design, rather than relying solely on access to digital tools.

Furthermore, students' strong support for improvements related to infrastructure and accessibility underscores the continuing relevance of equity and usability in digital learning environments. At the same time, the relatively lower emphasis on collaborative and externally networked learning models indicates the need for greater pedagogical mediation and exposure to more advanced forms of ICT-supported Islamic learning. Without such alignment, ICT risks remaining a supportive but peripheral component of Islamic Education rather than a catalyst for meaningful learning.

From a digital pedagogy perspective, this study reinforces the argument that technology integration alone does not guarantee improved academic outcomes. Instead, the educational value of ICT lies in its pedagogical enactment through teacher competence, structured guidance, and intentional alignment with the epistemological and moral objectives of Islamic Education.

In conclusion, this study contributes to the literature by providing empirically grounded insights into students' experiences of ICT integration in Islamic Education. It underscores the need to shift from technology adoption toward pedagogy-driven integration, ensuring that ICT functions as a meaningful enabler of academic understanding and holistic educational development. Future research is recommended to incorporate objective achievement measures, comparative group analyses, and mixed-methods designs to further elucidate the pedagogical mechanisms through which ICT enhances learning outcomes in Islamic Education.

REFERENCES

1. Ab Rahman, H. B., Zainal, N. B., & Ab Kari, N. A. B. (2015). Keberkesanan Penggunaan Ict Di Dalam Pengajaran Dan Pembelajaran Pendidikan Islam Bagi Sekolah Kebangsaan Desa Pandan Kuala Lumpur, 238-252. http://fstm.kuis.edu.my/icits/proceeding/fullpapers/IC-ITS%202015%20-%20IT%20075.pdf
2. Abdul Rahman, N. S., Mohd Zolkifli, Z. F., & Leh Ling, Y. (2020). Kepentingan Kemudahan Teknologi dan Motivasi Membentuk Kesedaran Pelajar dalam Pembelajaran Digital. Conference: National Research Innovation Conference (NRICon 2020) At: Kuching, Sarawak, 1-13. https://www.researchgate.net/publication/344781009_Kepentingan_Kemudahan_Teknologi_dan_Motivasi_Membentuk_Kesedaran_Pelajar_dalam_Pembelajaran_Digital
3. Aziz, N., & Sieng, L. W. (2019). Impak Pendidikan Berasaskan Teknologi Terhadap Peningkatan Prestasi Pelajar di UKM. Jurnal Personalia Pelajar, 22(1), 69-75. https://www.ukm.my/personalia/wp-content/uploads/2019/08/Artikel-11_Dr-Lai-Wei-Sieng_FEP.pdf
4. Mukaromah, E. (2020). Pemanfaatan Teknologi Informasi dan Komunikasi dalam Meningkatkan Gairah Belajar Siswa. Indonesian Journal of Education Management & Administration Review, 4(1), 175–182. http://dx.doi.org/10.4321/ijemar.v4i1.4381
5. Ismail, S., Saad, R., Radzi, N. A. A., Idris, N. A., & Aziz, N. E. M. (n.d.). (2021) Tahap Penggunaan Inovasi Teknologi Maklumat Dan komunikasi (ICT) Dalam Pengajaran Dan Pembelajaran (PDP) Pensyarah Kolej universiti Islam Melaka. Jurnal 'Ulwan, Jilid 6 (Bil.2) 173-194. https://www.unimel.edu.my/journal/index.php/JULWAN/article/view/901/717
6. Ismail, Z. (2018) Panduan Pengaplikasian Pembelajaran abad ke-21, Kementerian Pendidikan Malaysia (KPM)
7. Jasmi, Kamarul Azmi & Lamar, Md & Muhammad, Azhar & Karjo, Mohd Ismail & Ismail, Muhamad Faiz & Ilias, Mohd. (2012). Aplikasi teknologi dalam Pengajaran dan Pembelajaran Pendidikan Islam, 183-194.
8. Kalaiselvi, S., & Balamuralithara, B. (2019). Motivation in Information Communication and Technologybased science learning in Tamil schools. Jurnal Pendidikan IPA Indonesia, 8(1), 141-152. https://doi.org/10.15294/jpii.v8i1.16564
9. Lau, J. S. C., & Rosli, R. B. (2020). Pengetahuan Teknologi Maklumat dan Komunikasi Guru Matematik Sekolah Rendah. Malaysian Journal of Social Sciences and Humanities (MJSSH), 5(11), 71-84. https://doi.org/10.47405/mjssh.v5i11.546.

10. Rajan, K., & Hj Othman, N. (2022). Pengetahuan dan Kemahiran Teknologi Maklumat serta Komunikasi Guru Terhadap Prestasi Subjek Perniagaan Murid Sekolah Menengah. Malaysian Journal of Social Sciences and Humanities (MJSSH), 7(1), 204–215. https://doi.org/10.47405/mjssh.v7i1.1251.
11. Sa'ad, M. a. I. B. M., Fadzil, M. S. B., Asri, A. S. B. M., & Saidin, M. (2023). Perbandingan tentang Pengajaran & Pembelajaran Hadith Zaman Tabi'in dan Era ICT, 849- 858. https://fpqs.usim.edu.my/ms/eproceeding/
12. Samri, M. Z., & Jumaat, N. F. (2024). Online Collaborative Learning Approach for Malay Language Learning and Its Impact on Students' Achievement/ Pendekatan Pembelajaran Kolaboratif dalam Talian bagi Pembelajaran Bahasa Melayu dan Kesannya ke atas Pencapaian Pelajar. Sains Humanika, 16(2), 85–91. https://doi.org/10.11113/sh.v16n2.2139