Industrial Era Islamic Education Revolution 4.0: Strategy for Optimizing ICT Integration in Curriculum Education Study Programs

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ABSTRACT

This study investigates the strategic optimization of Information and Communication Technology (ICT) integration within the curriculum education programs at the Tarbiyah Faculty of UIN Antasari Banjarmasin, in the context of the Industrial Era Islamic Education Revolution 4.0. Using a mixed-methods approach, the research explores the effectiveness and challenges of ICT integration in enhancing pedagogical practices, student learning outcomes, and institutional strategies. The study combines qualitative narratives and quantitative data to assess the impact of ICT, focusing on teacher training, resource accessibility, and alignment with industrial era demands. The results show a moderate level of ICT adoption among students and faculty, with noticeable variations across disciplines. Key findings highlight the necessity for tailored ICT integration strategies to accommodate specific subject requirements and pedagogical preferences. Teacher training and continuous technical support emerge as critical factors for the effective use of ICT in teaching practices. Additionally, ICT's role in enhancing access to educational resources and fostering student engagement is identified as contributing to improved learning outcomes. Furthermore, aligning ICT integration with the demands of the industrial era is crucial, ensuring that students acquire the digital skills needed for success in the digital economy. These findings provide essential insights for developing strategic frameworks to optimize ICT integration, supporting innovation and excellence in Islamic education.

Keywords: *Industrial Era, Islamic Education Revolution 4.0, ICT Integration, Strategic optimization*

INTRODUCTION

In the constantly evolving landscape of education, the integration of Information and Communication Technology (ICT) emerges as a pivotal force, catalyzing transformative changes across various academic disciplines. Particularly within the realm of Islamic education, this integration holds immense potential for redefining pedagogical approaches, enhancing learning experiences, and nurturing a generation of digitally adept scholars capable of navigating the complexities of the modern world while upholding the tenets of Islamic tradition (AMIN et al., 2017; Hanafi et al., 2020; Fauziah et al., 2022). The Tarbiyah Faculty at Universitas Islam Negeri (UIN) Antasari Banjarmasin stands at the forefront of this paradigm shift, poised to embark on an ambitious journey towards harnessing the power of ICT to revolutionize Islamic education (Ashfihana, 2021). As the Industrial Era paves the way for unprecedented

technological advancements, education systems worldwide are compelled to adapt, innovate, and leverage digital tools to meet the evolving needs of learners and society at large (Christensen dkk., 2011).

The confluence of the Industrial Era and the Islamic Education Revolution 4.0 presents a unique opportunity for UIN Antasari Banjarmasin to redefine its educational landscape, reaffirm its commitment to academic excellence rooted in Islamic principles, and equip its students with the skills and knowledge requisite for success in the 21st century (Babbie, 2020). Within this context, the strategic integration of ICT into the curriculum of the Tarbiyah Faculty emerges as a cornerstone of progress, promising to catalyze holistic transformation across all facets of teaching and learning (Saada, 2020; Sitopu et al., 2024).

This paper endeavors to delineate a comprehensive strategy for optimizing ICT integration within the curriculum of the Tarbiyah Faculty at UIN Antasari Banjarmasin. By elucidating the rationale, objectives, methodologies, and anticipated outcomes of this transformative initiative, it seeks to provide a roadmap for stakeholders, educators, and policymakers alike, guiding them toward the realization of a dynamic, technology-enabled educational ecosystem grounded in the ethos of Islamic pedagogy (Bouhnik & Deshen, 2014; Mutohar & Trisnantari, 2020).

Central to this endeavor is the recognition of ICT as an enabler of pedagogical innovation rather than a mere adjunct to traditional teaching methods (Nasution dkk., 2022; Rizky 2022). By leveraging digital technologies such as virtual classrooms, interactive multimedia resources, mobile learning applications, and online collaboration platforms, educators can transcend the constraints of time and space, foster engagement, facilitate personalized learning experiences, and cultivate critical thinking skills among students (Guna et al., 2024; Bouhnik & Deshen, 2014).

Furthermore, the integration of ICT offers an unprecedented opportunity to enrich the study of Islamic education with interdisciplinary perspectives, drawing upon insights from fields such as digital humanities, educational psychology, computer science, and information technology (Beks dkk., 2022). By synthesizing traditional Islamic scholarship with contemporary methodologies and insights, the Tarbiyah Faculty can cultivate a dynamic learning environment that resonates with the needs and aspirations of today's learners (Karakostantaki & Stavrianos, 2021).

Moreover, the strategic integration of ICT within the curriculum can potentially democratize access to education, transcending geographical barriers and socioeconomic disparities (Babbie, 2020). Through the development of open educational resources, digital libraries, and online learning platforms, UIN Antasari Banjarmasin can extend its educational outreach beyond the confines of the physical campus, empowering learners from diverse backgrounds to embark on a journey of intellectual discovery and spiritual enrichment (Binsaleh & Binsaleh, 2020).

In addition to the cited literature, it is essential to highlight the multifaceted benefits that the integration of ICT brings to the realm of Islamic education. Beyond enhancing pedagogical methodologies, strategic utilization of digital technologies fosters a culture of innovation, creativity, and collaboration among students and educators (Hardaker dkk., 2017). By embracing ICT, the Tarbiyah Faculty can cultivate an ecosystem where learning transcends the boundaries of the traditional classroom, enabling students to explore, experiment, and engage with knowledge in dynamic ways that resonate with their digital-native sensibilities (Teddlie & Tashakkori, 2009). Moreover, the integration of ICT empowers educators to personalize learning experiences, catering to individual students' diverse needs, preferences, and learning

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styles (Johnson & Christensen, 2019). Through adaptive learning algorithms, data analytics, and artificial intelligence-driven tools, instructors can tailor instructional content, pacing, and assessments to optimize student outcomes, fostering a culture of inclusivity and equity within the educational ecosystem (Muluk dkk., 2019).

Furthermore, the strategic integration of ICT within the curriculum facilitates seamless connectivity and communication among stakeholders, fostering a vibrant community of practice where ideas are exchanged, insights are shared, and collaborations are forged (Creswell & Creswell, 2017). By leveraging digital communication platforms, social media networks, and online forums, educators can cultivate a culture of continuous professional development, enabling them to stay abreast of emerging trends, best practices, and scholarly debates in Islamic education (Park, 2009). Additionally, the infusion of ICT into the curriculum enables students to develop essential digital literacy skills requisite for success in the knowledge economy (Nasution dkk., 2022). From information retrieval and evaluation to digital communication and collaboration, students are empowered to navigate the vast expanse of digital information with discernment, criticality, and ethical responsibility (Herzog et al., 2020; Astuti et al., 2023)

Moreover, the integration of ICT catalyzes educational reform, inspiring innovative approaches to curriculum design, instructional delivery, and assessment practices (Creswell & Creswell, 2017). By embracing a pedagogy informed by active learning, inquiry-based instruction, and authentic assessment, educators can cultivate a learning environment that stimulates intellectual curiosity, fosters creativity, and nurtures a spirit of lifelong learning among students (Merriam & Tisdell, 2015; Khotimah et al., 2024). Finally, the strategic integration of ICT within the curriculum represents a proactive response to the imperatives of the 21st-century knowledge society (Kothari, 2004; Sugiarto & Suhono, 2024). By equipping students with the digital skills, competencies, and dispositions necessary for success in an increasingly complex and interconnected world, UIN Antasari Banjarmasin reaffirms its commitment to fostering holistic development and nurturing future leaders who are not only intellectually astute but also ethically grounded in the principles of Islamic ethics and social responsibility (Lawrence Neuman, 2014).

Against this backdrop, the primary objective of this study is to delineate a comprehensive strategy for optimizing ICT integration within the curriculum of the Tarbiyah Faculty at UIN Antasari Banjarmasin. By examining the theoretical underpinnings, practical considerations, and pedagogical implications of ICT integration, this study seeks to provide actionable insights and recommendations that can inform policy decisions, curriculum development initiatives, and instructional practices to foster transformative educational experiences grounded in the ethos of Islamic pedagogy. Through a systematic analysis of existing literature, case studies, and best practices in the field of ICT integration in Islamic education, this study aims to generate evidence-based recommendations that can guide stakeholders, educators, and policymakers in leveraging digital technologies to enhance teaching and learning outcomes, promote inclusivity and equity, and empower students to thrive in the digital age while remaining steadfast in their commitment to the principles of Islamic scholarship and moral integrity (Teddlie & Tashakkori, 2009).

In conclusion, the Industrial Era Islamic Education Revolution 4.0 represents a watershed moment in the history of Islamic education, heralding a new era of innovation, inclusivity, and excellence. By embracing the strategic integration of ICT within the curriculum of the Tarbiyah Faculty, UIN Antasari Banjarmasin can chart a

course toward educational transformation, empowering its students to navigate the complexities of the modern world with confidence, competence, and conviction while remaining steadfast in their commitment to the principles of Islamic scholarship and moral integrity (Fauziah dkk., 2022).

METHOD

This study embraces a comprehensive mixed-methods approach to explore the optimization of ICT integration within the curriculum education study programs at the Tarbiyah Faculty of UIN Antasari Banjarmasin. By blending qualitative and quantitative methodologies, the research aims to provide a panoramic understanding of ICT integration in curriculum education, encompassing subjective experiences and objective outcomes (Hanafi dkk., 2020). This approach is chosen for its ability to triangulate findings from diverse data sources and perspectives, thereby enhancing the credibility and validity of the research outcomes (Babbie, 2020).

Rationale for Mixed-Methods Design

The decision to employ a mixed-methods design stems from recognizing its inherent strengths in providing a comprehensive understanding of ICT integration in curriculum education. By integrating both qualitative narratives and quantitative metrics, this approach facilitates a more nuanced exploration of the multifaceted nature of the research topic (Aydin & Gürol, 2019). Qualitative data offer insights into the subjective experiences, perceptions, and attitudes of stakeholders involved in ICT integration, shedding light on the contextual nuances and complexities inherent in the process. Conversely, quantitative metrics provide objective measures and statistical analyses, allowing for identifying trends, patterns, and correlations within the data. By synthesizing these complementary data sources, the study can achieve a more holistic comprehension of ICT integration, capturing the phenomenon's breadth and depth.

Moreover, the mixed-methods approach enables the research to uncover hidden patterns and insights that may elude a singular methodological approach. By triangulating findings from different data sources, researchers can validate and corroborate emerging themes and hypotheses, enhancing the study outcomes' reliability and validity (Aydin & Gürol, 2019). This methodological triangulation enriches the depth of analysis, offering a more robust understanding of ICT integration in curriculum education. Furthermore, the flexibility inherent in mixed-methods research allows researchers to adapt their approach to the evolving needs and complexities of the research context, ensuring a comprehensive examination of the research problem from multiple perspectives.

Research Approach

The research embraces a dialectical approach, blending deductive reasoning with inductive inquiry, as Creswell & Creswell, (2017) advocated. Drawing on existing theories and literature provides a solid foundation while remaining receptive to emergent themes and hypotheses enriches the depth and rigor of the study. This dynamic methodological stance allows for theoretical enrichment and practical applicability in exploring ICT integration in curriculum education. By synthesizing established knowledge with emergent insights, the study strives to offer a comprehensive understanding of the complexities surrounding ICT integration, thereby contributing meaningfully to academic discourse and practical implementations in the field.

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Data Collection Methods

To understand ICT integration within the context of the Industrial Era Islamic Education Revolution 4.0, a comprehensive array of data collection methods is deployed (Beks et al., 2022; Bouhnik & Deshen, 2014). Surveys, interviews, focus groups, observation protocols, and document analysis are essential conduits for gathering insights from diverse stakeholders involved in curriculum education at the Tarbiyah Faculty of UIN Antasari Banjarmasin. These meticulously chosen methods ensure a robust exploration of ICT integration, encompassing perspectives from students, faculty members, administrators, and ICT specialists within the unique context of the institution.

Researchers use a combination of data collection techniques to capture a multifaceted understanding of ICT integration in curriculum education (Johnson & Christensen, 2019). Surveys enable the collection of quantitative data, facilitating the examination of broad trends and attitudes towards ICT adoption. Conversely, interviews and focus groups provide platforms for in-depth qualitative exploration, offering insights into individual experiences and perceptions regarding ICT integration (Creswell & Creswell, 2017). Additionally, observation protocols allow researchers to directly observe ICT practices in educational settings, fostering a deeper contextual understanding of implementation challenges and successes.

Furthermore, document analysis complements these methods by scrutinizing relevant materials such as curriculum documents, policies, and reports (Aydin & Gürol, 2019). This approach offers insights into formalized approaches to ICT integration, providing a lens through which to assess the alignment between institutional objectives and actual practices. Together, these meticulously chosen data collection methods enable a comprehensive examination of ICT integration at the Tarbiyah Faculty of UIN Antasari Banjarmasin, enriching the depth and breadth of the study's insights.

Sampling Strategy

In the Industrial Era Islamic Education Revolution 4.0, optimizing ICT integration at the Tarbiyah Faculty of UIN Antasari Banjarmasin demands meticulous sampling strategies (Johnson & Christensen, 2019). Utilizing purposive and stratified sampling techniques (Creswell & Creswell, 2017), the study ensures the inclusion of participants with relevant expertise while maintaining diversity. By selecting stakeholders like students, faculty, administrators, and ICT specialists (Beks dkk., 2022), the research aims to authentically capture the breadth of experiences and perspectives surrounding ICT integration in curriculum education. This comprehensive approach enhances the representativeness and validity of the findings, offering nuanced insights into the complex dynamics of ICT integration within Islamic education.

Ethical Considerations

In the context of the Industrial Era Islamic Education Revolution 4.0 at the Tarbiyah Faculty of UIN Antasari Banjarmasin, significant emphasis is placed on ethical considerations to safeguard participants' rights and well-being. Protection measures, including informed consent, confidentiality, and anonymity provisions, are meticulously implemented to uphold ethical integrity (Patton, 2002). Where applicable, institutional review board (IRB) approval further ensures adherence to established ethical guidelines and standards (Teddlie & Tashakkori, 2009). These measures

underscore the commitment to ethical research practices, maintaining trust and integrity throughout the study.

Limitations and Mitigation Strategies

The study proactively identifies and addresses potential limitations such as sample size, time, and resource constraints. Mitigation strategies are formulated to minimize their impact on the validity and reliability of the findings, enhancing the credibility and trustworthiness of the conclusions (Merriam & Tisdell, 2015). Transparent acknowledgment of limitations contributes to the overall robustness of the study

Table 1: Summary of Research Methodology

Aspect	Activities	Description	Evidence
Research Design	Mixed-methods approach	Explore ICT integration with qualitative and quantitative methods	(Hanafi dkk., 2020)
Rationale	Justify mixed-methods design	Provides a nuanced understanding of ICT integration	(Aydin & Gürol, 2019)
Research Approach	Dialectical approach	Blend deductive reasoning and inductive inquiry	(Creswell & Creswell, 2017)
Data Collection	Surveys, interviews, focus groups, observation protocols, document analysis	Gather diverse perspectives and data sources.	(Beks dkk., 2022); (Johnson & Christensen, 2019)
Sampling Strategy	Purposive, stratified sampling	Include diverse stakeholders to capture varied experiences	(Creswell & Creswell, 2017)
Ethical Considerations	Informed consent, confidentiality, anonymity, IRB approval	Protect participants' rights and maintain integrity	(Patton, 2002)
Limitations	Identify and mitigate constraints	Acknowledge and minimize limitations to enhance validity	(Merriam & Tisdell, 2015)

Processing, 2024

The research employs mixed methods to explore ICT integration. Its justification lies in the nuanced insights gained. A dialectical approach blends reasoning methods. Data collection includes surveys, interviews, focus groups, and document analysis. Sampling is purposive and stratified for diversity. Ethical considerations include informed consent and IRB approval. Limitations are identified and mitigated. Evidence supports each aspect.

ICT Integration in Curriculum Education at UIN Antasari Banjarmasin: Research Methodology

This framework model delineates the research methodology for optimizing ICT integration in curriculum education at the Tarbiyah Faculty of UIN Antasari Banjarmasin during the Industrial Era Islamic Education Revolution 4.0. The model comprises a literature review, mixed-methods research incorporating qualitative and quantitative analyses, and exploration of ICT models/frameworks, pedagogical transformations, and curriculum development. It aims to provide a comprehensive

understanding of strategies for ICT integration, crucial for adapting to the demands of contemporary education within an Islamic context.

RESULT AND DISCUSSION
Quantitative Data Analysis
Frequency of ICT Usage

The analysis indicates that students dedicate, on average, 15 hours per week to using ICT tools for academic purposes, with a standard deviation of 3 hours, highlighting moderate variation among participants. Among these activities, 60% of students report engaging with ICT tools daily, primarily for assignments and research, while 30% indicate weekly usage. Furthermore, the median frequency of accessing online learning materials, such as recorded lectures and academic readings, is three times per week, with 40% of participants exceeding this frequency by engaging five or more times weekly. Email remains the dominant mode of academic communication, used by 75% of respondents as the primary channel for interactions with faculty and peers, followed by instant messaging platforms, which are preferred by 15%.

Types of Technologies Used

The variety of ICT tools employed by students and faculty underscores the adaptability of participants in integrating technology into learning and teaching. Google Workspace, including tools such as Google Docs, Google Meet, and Google Slides, is reported as the most commonly used collaborative platform, with 60% of respondents employing it weekly for group projects and presentations. Additionally, 80% of participants regularly use educational software such as interactive simulations, virtual laboratories, and adaptive learning platforms for hands-on and experiential learning activities. Notably, 45% of respondents use Kahoot and Quizizz for real-time assessments and quizzes, fostering engagement. Mobile learning applications, such as Moodle and Edmodo, are utilized by 70% of participants, with 50% accessing them daily to review course materials, complete assignments, or attend virtual classes.

ICT Proficiency Levels

Self-reported ICT proficiency levels reveal a wide distribution among participants. Beginners, constituting 30% of respondents, primarily use basic tools like word processors and email. The intermediate group, representing 40%, demonstrates familiarity with advanced features such as data analysis tools, collaborative platforms, and basic coding. Advanced users, comprising the remaining 30%, report expertise in using specialized software like SPSS, AutoCAD, and video editing tools, and exhibit proficiency in troubleshooting technical issues. The average score on ICT competency assessments is 75%, with the top quartile achieving scores above 85%, reflecting a high degree of skill. Interestingly, 50% of participants report receiving formal ICT skills training, with **35%** attending institution-sponsored workshops and **15%** pursuing external certifications.

Correlation Analysis

Correlation analysis uncovers significant relationships between ICT usage and various academic and professional outcomes. A strong positive correlation (r = 0.70) is observed between students' ICT proficiency and academic performance, with higher proficiency translating to improved grades and efficient task completion. For example, students scoring above 85% in ICT competency assessments show a 20% improvement in assignment quality and exam performance compared to their peers. Faculty members' ICT usage patterns exhibit a positive correlation (r = 0.65) with teaching effectiveness, as faculty utilizing tools like virtual classrooms and interactive

whiteboards report 30% higher engagement scores from students. Additionally, a significant positive relationship (r = 0.60) is evident between students' access to ICT resources and their overall satisfaction with the learning experience, with participants who have unrestricted access to high-speed internet and advanced tools reporting a 25% higher satisfaction level than those facing limited access.

Table 2: Quantitative Data Distribution and Correlation Analysis in the Study of ICT Integration in Curriculum Education

ICT Usage Metrics	Frequency/Percentage
Average Weekly ICT Usage (hours)	15
Median Frequency of Online Learning Access (times/week)	3
Preferred Mode of Academic Communication	Email (75%)
Types of Technologies Employed	**Percentage of Participants**
Google Workspace	60%
Educational Software	80%
Mobile Learning Applications	70%
Self-reported ICT Proficiency Levels	**Percentage of Participants**
Beginner	30%
Intermediate	40%
Advanced	30%
ICT Competency Assessment Scores	**Average Score (%)**
Average Score	75%
Formal Training in ICT Skills	**Percentage of Participants**
Yes	50%
Correlation Analysis	**Correlation Coefficient (r)**
ICT Proficiency & Academic Performance	0.70
Faculty ICT Usage & Teaching Effectiveness	0.65
Student Access to ICT Learning Satisfaction	0.60

Processing, 2024

These tables provide a clear and concise overview of the quantitative data distribution and correlation analysis conducted in the study on ICT integration in curriculum education.

Qualitative Data Analysis
Transformative Effects of ICT Integration on Pedagogical Practices

Participants in the study highlighted the profound impact of integrating Information and Communication Technology (ICT) into the curriculum at the Tarbiyah Faculty of UIN Antasari Banjarmasin. Participant 1 shared, "Integrating ICT into the curriculum has revolutionized our teaching methods. It allows for more interactive and engaging learning experiences." This sentiment was strongly echoed by Participant 3, who added, "The use of ICT in our curriculum has improved student engagement and motivation, leading to better learning outcomes." The consensus among participants underscores the transformative effect of ICT on traditional teaching methods, making

learning more dynamic and participatory. This shift in pedagogy has not only enhanced student interest but has also contributed to more effective and meaningful learning experiences.

Improved Access to Educational Resources

Another significant theme that emerged from the qualitative data was the enhancement of access to educational resources through ICT integration. Participant 2 emphasized, "ICT integration has facilitated access to a wealth of educational resources, enhancing the quality of our teaching materials." This highlights the ability of technology to broaden the availability of learning materials, including academic journals, multimedia resources, and online courses, thereby enriching the educational experience. The increased accessibility of such resources has enabled both teachers and students to engage with more diverse and up-to-date content, thereby elevating the quality of education. The integration of digital libraries, online databases, and learning management systems has especially enhanced the depth and breadth of learning materials available to the university community.

Preparation for the Industrial Era and Digital Skills Development

Participants also acknowledged the forward-thinking approach of the Tarbiyah Faculty in preparing students for the demands of the industrial era through ICT integration. Participant 5 remarked, "The Tarbiyah Faculty's emphasis on ICT integration has prepared students for the demands of the industrial era, equipping them with essential digital skills." This observation reflects a growing recognition of the importance of digital literacy and the necessity for students to develop skills that will enable them to thrive in a rapidly evolving job market. By incorporating ICT into the curriculum, the university ensures that its students acquire the technological competence needed to meet industry requirements, enhancing their employability and readiness for the digital workforce.

Need for Teacher Training and Support

While the benefits of ICT integration were widely recognized, participants also stressed the critical need for adequate teacher training and ongoing support to maximize the effectiveness of ICT in teaching. Participant 4 pointed out, "ICT integration requires adequate training and support for teachers to utilize technology in their teaching practices." This insight highlights the challenge many educators face when incorporating new technologies into their teaching methods. Teachers must be equipped with the necessary technical skills and pedagogical strategies to effectively integrate ICT into their classrooms. Professional development programs that provide teachers with hands-on experience and ongoing support are essential for overcoming these barriers.

The Transformative Role of ICT in Education

The overall qualitative data analysis reveals a consensus among participants regarding the significant and transformative impact of ICT integration at the Tarbiyah Faculty of UIN Antasari Banjarmasin. The integration of ICT has led to more engaging and effective teaching practices, enhanced access to a wider range of educational resources, and better preparation of students for the future workforce. However, there is a clear recognition that for these benefits to be fully realized, ongoing professional development for teachers is essential. By addressing the need for teacher training and ensuring continuous support, the Tarbiyah Faculty can fully harness the potential of ICT to create a more dynamic, resource-rich, and future-ready educational environment.

Table 3: Summary of Participant Insights on ICT Integration in Curriculum

Participant	Key Insight
P1	ICT integration revolutionizes teaching methods, enhancing engagement.
P2	ICT facilitates access to quality educational resources and enriching teaching materials.
P3	ICT improves student engagement and learning outcomes.
P4	Adequate training and support are crucial for effective ICT integration.
P5	ICT integration prepares students for the demands of the industrial era.

Processing, 2024

This table provides a brief overview of the key insights shared by participants regarding the impact of ICT integration in the curriculum at the Tarbiyah Faculty of UIN Antasari Banjarmasin. Each participant's perspective highlights different aspects of the transformative effects of ICT on teaching practices, student engagement, and readiness for the industrial era.

Integration of Quantitative and Qualitative Findings

Integrating quantitative and qualitative findings involves synthesizing data from both methodologies to comprehensively understand ICT integration within the curriculum education study programs at the Tarbiyah Faculty of UIN Antasari Banjarmasin (Creswell & Creswell, 2017). Through a systematic synthesis process, researchers identify overarching themes, patterns, and relationships that emerge from the combined analysis of numerical data and qualitative narratives (Bouhnik & Deshen, 2014). By triangulating quantitative metrics with qualitative insights, researchers can enrich their understanding of the complexities and nuances surrounding ICT integration, shedding light on both the quantitative prevalence and qualitative implications of technology integration in education.

A comparative analysis of quantitative and qualitative data entails examining similarities, differences, and divergences between numerical trends and qualitative narratives (Johnson & Christensen, 2019). Researchers juxtapose quantitative measures, such as frequency of ICT usage or availability of technological resources, with qualitative themes extracted from interviews, focus groups, or open-ended survey responses (Aydin & Gürol, 2019). This comparative approach enables researchers to discern congruencies or discrepancies between stakeholders' perceptions and objective metrics, offering valuable insights into the alignment between attitudes, behaviors, and outcomes related to ICT integration.

Identifying converging themes involves pinpointing commonalities and shared perspectives that emerge from synthesizing quantitative and qualitative data (Creswell & Creswell, 2017). Researchers analyze both data types to identify recurring themes, issues, or challenges related to ICT integration within the curriculum education study programs (Bouhnik & Deshen, 2014). Converging themes may encompass factors influencing technology adoption, perceived benefits and drawbacks of ICT integration, barriers to effective implementation, and strategies for optimization. By identifying converging themes, researchers can distill key insights that resonate across quantitative measures and qualitative narratives, providing a unified understanding of ICT integration that informs evidence-based recommendations and strategies for curriculum enhancement.

Interpretation and Implications

Interpreting analytical results involves comprehensively analyzing the quantitative and qualitative findings to derive meaningful insights and implications (Johnson & Christensen, 2019). Researchers examine statistical analyses, thematic patterns, and qualitative narratives to interpret the data regarding ICT integration within the curriculum education study programs at the Tarbiyah Faculty of UIN Antasari Banjarmasin (Aydin & Gürol, 2019). Through a nuanced interpretation process, researchers aim to uncover underlying meanings, trends, and implications embedded within the data, providing a deeper understanding of the factors shaping ICT integration and its impact on curriculum education.

Discussion of findings in relation to research objectives entails reflecting on how the analytical results align with the study's overarching goals and aims (Creswell & Creswell, 2017). Researchers assess the extent to which the findings address the research questions, hypotheses, or objectives outlined at the study's outset. By comparing the findings against the research objectives, researchers can evaluate the degree of alignment and identify areas where the data may offer insights or pose challenges to the initial research framework.

The implications for curriculum education and ICT integration encompass the practical ramifications and applications of the research findings within educational contexts (Bouhnik & Deshen, 2014). Researchers examine how the insights derived from the study can inform curriculum design, instructional practices, professional development initiatives, and policy interventions aimed at enhancing ICT integration in educational settings (Fauziah dkk., 2022). By identifying implications for practice, researchers aim to bridge the gap between research and application, offering actionable recommendations and strategies for optimizing ICT integration within the curriculum education study programs.

Limitations and Future Directions

The identification of analytical limitations involves a candid reflection on the constraints, biases, and challenges encountered during the research process (Bouhnik & Deshen, 2014). Researchers critically assess the methodological approach, data collection methods, and analytical techniques employed, acknowledging any inherent limitations or weaknesses that may have influenced the findings (Creswell & Creswell, 2017).

Suggestions for future research endeavors entail proposing areas of inquiry, exploration, or investigation that build upon the findings and insights generated by the current study (Aydin & Gürol, 2019). Researchers may identify gaps, unanswered questions, or emerging trends within ICT integration and curriculum education, offering directions for future research initiatives.

Recommendations for further investigation extend beyond mere suggestions for future research endeavors to provide actionable guidance on specific areas or topics warranting deeper scrutiny (Johnson & Christensen, 2019). Researchers offer targeted recommendations for conducting follow-up studies, pilot interventions, or longitudinal assessments to address unresolved questions or validate emerging findings. The conclusion concludes with final remarks on the significance of the analysis in advancing knowledge and practice in ICT integration and curriculum education (Creswell & Creswell, 2017). Researchers emphasize the practical implications of their findings for educational research, policymaking, and instructional practice, underscoring the relevance and impact of their work on shaping educational practices and fostering positive outcomes for learners, educators, and institutions alike.

DISCUSSION

The discussion section delves into the interpretation and implications of the findings regarding the optimization of ICT integration within the curriculum education study programs at the Tarbiyah Faculty of UIN Antasari Banjarmasin. The study combines quantitative and qualitative insights to comprehensively explore the challenges, opportunities, and implications associated with ICT integration in Islamic education.

Comparison with Previous Research

The quantitative findings indicate a moderate level of ICT adoption among students and faculty members, consistent with previous research on technology utilization in educational settings. For instance, AMIN et al. (2017) found similar moderate levels of ICT usage in educational institutions, suggesting that while technology adoption is increasing, it is still in the early stages of full integration. This finding aligns with Christensen et al. (2011), who highlighted that the extent and modes of ICT usage vary significantly across different subject areas, requiring tailored integration strategies that accommodate both disciplinary requirements and pedagogical preferences. This variation is critical in understanding that a one-size-fits-all approach to ICT integration may not be effective.

Challenges and Opportunities in ICT Integration

The study also provides valuable insights into the contextual factors influencing ICT implementation. Qualitative analysis emphasized the importance of technical support, professional development, and institutional leadership in facilitating effective integration practices (Hanafi et al., 2020). These factors are echoed in the works of Johnson & Christensen (2019), who argue that effective integration is contingent upon not only the availability of technology but also the capacity of educators to integrate it into their teaching practices. The study's findings also resonate with Creswell & Creswell (2017), who highlight the importance of understanding stakeholders' lived experiences and perspectives when interpreting the role of technology in curriculum education.

The convergence of these findings emphasizes the need for holistic approaches to ICT integration that consider both technical and pedagogical aspects. The findings suggest that while technology is a powerful tool for enhancing engagement and pedagogy, its integration cannot succeed without comprehensive support systems for faculty and students alike. The importance of technical support, professional development, and leadership in this process cannot be overstated (Park, 2009; Thorne, 2013).

Implications for Educational Practice and Policy

Synthesizing the quantitative and qualitative findings highlights the practical recommendations for enhancing ICT integration in curriculum education. One key recommendation is the necessity for tailored professional development programs that equip faculty members with the necessary skills and competencies to effectively utilize ICT tools in teaching. Continuous training initiatives are crucial for addressing gaps in ICT proficiency and promoting student-centered learning experiences (Thorne, 2013). This approach aligns with Park (2009), who advocates for ongoing professional development to help educators stay updated on new technologies and pedagogical strategies.

Institutional support and leadership are identified as crucial elements for fostering an environment conducive to ICT integration. This is consistent with the findings of Adelana et al. (2024), who argue that robust institutional leadership plays a

central role in prioritizing investments in technological infrastructure and developing policies that support ICT integration. The findings suggest that without clear leadership and support, the adoption of ICT in the curriculum will be slow and fragmented, further hindering its effectiveness.

Promoting Inclusive Education and Innovation

In addition, student-centered approaches to ICT integration, informed by universal design principles for learning, are essential for promoting inclusive education. By utilizing ICT tools such as multimedia resources and collaborative platforms, educators can create more authentic learning environments that engage students in active inquiry and knowledge construction. This approach aligns with Bouhnik & Deshen (2014), who emphasize the importance of adapting ICT integration to the diverse needs and preferences of students.

The study also sheds light on the importance of integrating ICT within the broader context of the Industrial Era Islamic Education Revolution 4.0. By leveraging mobile learning management systems and other ICT tools, educators can transcend the limitations of traditional instructional methods and offer dynamic, interactive learning experiences (Fauziah et al., 2022). The integration of technology into curriculum education is thus not only a pedagogical advancement but also a step toward aligning Islamic education with the needs and opportunities of the digital age.

Systemic Reforms and Future Research Directions

The discussion further emphasizes the need for systemic reforms and strategic investments in ICT infrastructure to improve educational quality and relevance. Policy interventions that promote ICT literacy among educators and students are crucial for facilitating the seamless integration of technology into teaching and learning processes (Osman et al., 2020). The findings support the call for more robust policy frameworks that prioritize ICT literacy and provide the resources necessary for its integration.

The study also advocates for ongoing research and evaluation to monitor the efficacy of ICT integration initiatives. Longitudinal studies tracking the impact of ICT on student learning outcomes, academic performance, and career trajectories will provide valuable insights into the long-term benefits and challenges associated with technology-enabled education (Hardaker et al., 2017). Comparative studies across different educational contexts will offer cross-cultural perspectives on best practices for optimizing ICT integration (Showail, n.d.). In conclusion, the study underscores the transformative potential of ICT integration in curriculum education at UIN Antasari Banjarmasin and its alignment with the broader objectives of the Industrial Era Islamic Education Revolution 4.0. Through strategic investments in ICT infrastructure, capacity-building initiatives, and collaborative partnerships, stakeholders can harness technology as a powerful enabler of inclusive, equitable, and quality education. This study highlights the importance of evidence-based policymaking, ongoing research, and stakeholder engagement in realizing the full potential of ICT to empower learners, enhance pedagogical practices, and advance Islamic education in the contemporary era.

CONCLUSION

In conclusion, this study on optimizing ICT integration within the curriculum education study programs at the Tarbiyah Faculty of UIN Antasari Banjarmasin has successfully addressed the research aim of understanding the challenges, opportunities, and implications associated with ICT integration in Islamic education. The findings clearly indicate that while ICT adoption among students and faculty

members is moderate, there is a significant need for tailored strategies to enhance its integration across various subject areas. The study identifies key factors such as technical support, professional development, and institutional leadership as essential for facilitating effective ICT integration. Furthermore, the study underscores the importance of ICT in promoting student engagement and active learning, which is particularly crucial for revitalizing Islamic pedagogy in the digital age.

The research also suggests that the optimization of ICT in curriculum education should not only focus on technological tools but also consider pedagogical adjustments that cater to diverse learning needs. Additionally, the findings highlight the importance of continuous professional development and institutional support for faculty members to enhance their ICT competencies.

ACKNOWLEDGEMENT

AUTHOR CONTRIBUTION STATEMENT

Thanks to the authors who have each contributed to this research so that it is worthy of publication.

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