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Examining It-Based Human Resources Strategies in Islamic Higher Education and Islamic Boarding Schools in Indonesia

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Keywords:
Integration of Technology, Human Resources, Islamic Education, Higher Education.

Abstract

This study examines IT-based HR development strategies in Islamic higher education and boarding schools in Indonesia, focusing on the Faculty of Tarbiyah at Universitas Islam Negeri Sultan Thaha Saifuddin, Jambi. It also explores the integration of IT in primary school teacher of education training programs. The research employed interviews, surveys, and document analysis using a case study approach. Participants included faculty members, administrators, students, and teachers/administrators from selected Islamic boarding schools. The findings show the faculty's progressive integration of IT-based HR development strategies. These include Learning Management Systems (LMS), online training modules, virtual classrooms, and educational apps. These tools improve instruction, student engagement, and administrative efficiency. The study also highlights the inclusion of IT in basic school teacher education training programs. Incorporating IT skills into the curriculum is crucial for prospective teachers to effectively use educational technologies in their classrooms. This research enhances the understanding of IT-based HR development strategies in Indonesia's Islamic higher education and boarding schools. It guides educational institutions and policymakers for better integration of IT in teacher education programs, promoting effective HR development strategies, and improving overall educational quality.

Kata kunci:
Integrasi Teknologi, Sumber Daya Manusia, Pendididkan Islam, Pendidikan Tinggi.

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Abstrak

Kajian ini mengkaji strategi pengembangan SDM berbasis IT pada perguruan tinggi Islam dan pesantren di Indonesia, dengan fokus pada Fakultas Tarbiyah Universitas Islam Negeri Sultan Thaha Saifuddin, Jambi. Ini juga mengeksplorasi integrasi TI dalam program pelatihan pendidikan guru sekolah dasar. Penelitian ini menggunakan wawancara, survei, dan analisis dokumen dengan menggunakan pendekatan studi kasus. Peserta terdiri dari dosen, pengurus, student, dan guru/pengurus dari pondok pesantren terpilih. Temuan menunjukkan fakultas integrasi progresif strategi pengembangan SDM berbasis IT. Ini termasuk Sistem Manajemen Pembelajaran (LMS), modul pelatihan online, ruang kelas virtual, dan aplikasi pendidikan. Alat-alat ini meningkatkan instruksi, keterlibatan mahasiswa, dan efisiensi administrasi. Studi ini juga menyoroti inklusi TI dalam program pelatihan pendidikan guru sekolah dasar. Memasukkan keterampilan TI ke dalam kurikulum sangat penting bagi calon guru untuk menggunakan teknologi pendidikan secara efektif di ruang kelas mereka. Penelitian ini meningkatkan pemahaman tentang strategi pengembangan SDM berbasis IT di perguruan tinggi Islam dan pesantren di Indonesia. Ini memandu lembaga pendidikan dan pembuat kebijakan untuk integrasi TI yang lebih baik dalam program pendidikan guru, mempromosikan strategi pengembangan SDM yang efektif, dan meningkatkan kualitas pendidikan secara keseluruhan.

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INTRODUCTION

In recent years, there has been a growing recognition of the importance of Information Technology (IT) in various sectors, including education.[1] It has the potential to revolutionize teaching and learning processes, offering new avenues for interactive and engaging educational experiences. This global recognition has extended to the field of Islamic education in Indonesia, where Islamic higher education institutions and boarding schools play a vital role in shaping students' religious education and values.[2] Islamic higher education institutions and boarding schools strive to provide a holistic education integrating religious teachings with modern knowledge and skills. By incorporating IT into their educational practices, these institutions can harness its power to enrich religious education, enhance pedagogical methods, and provide students with the digital literacy skills necessary for success in the modern world. IT-based strategies can facilitate interactive learning experiences, enable access to various educational resources, and promote collaboration among students and teachers.[3]

Furthermore, the integration of IT in Islamic education can enhance administrative efficiency and streamline processes within these institutions. Islamic higher education institutions and boarding schools can optimize operations, reduce paperwork, and enhance efficiency by utilizing IT tools and platforms for administrative tasks such as student record management, scheduling, and communication.[4] Moreover, integrating IT-based strategies in madrasas and modern Islamic boarding schools aligns with the Indonesian government's focus on digital transformation in education. The government has emphasized promoting technology-enabled education to prepare students for the digital era and ensure competitiveness in the global workforce. Therefore, integrating IT-based strategies in Islamic higher education institutions and Islamic boarding schools in Indonesia can transform the educational landscape, improving the quality of education and equipping students with the necessary skills for success. This research seeks to analyze and evaluate the utilization of IT-based HR

[1] Tuğba Koç, Aykut Hamit Turan, dan Algin Okursoy, "Acceptance and Usage of a Mobile Information System in Higher Education: An Empirical Study with Structural Equation Modeling," *The International Journal of Management Education* 14, no. 3 (1 November 2016): 286–300, doi:10.1016/j.ijme.2016.06.001. Purniadi Putra dkk., "The Relevancy on Education Release Revolution 4.0 in Islamic Basic Education Perspective in Indonesia (An Analysis Study of Paulo Freire's Thought)," *Test Engineering & Management* 83 (2020): 10256–63. Sudarmo Sudarmo dkk., "The Future of Instruction Media in Indonesian Education: Systematic Review," *AL-ISHLAH: Jurnal Pendidikan* 13, no. 2 (31 Agustus 2021): 1302–11, doi:10.35445/alishlah.v13i2.542.

[2] Maryam N. Al-Nuaimi dan Mostafa Al-Emran, "Learning Management Systems and Technology Acceptance Models: A Systematic Review," *Education and Information Technologies* 26, no. 5 (1 September 2021): 5499–5533, doi:10.1007/s10639-021-10513-3. Purniadi Putra dkk., "The Students Learning from Home Experiences during Covid-19 School Closures Policy In Indonesia," *Jurnal Iqra' : Kajian Ilmu Pendidikan* 5, no. 2 (5 September 2020): 30–42, doi:10.25217/ji.v5i2.1019. Aslan Aslan dkk., "TEACHER'S LEADERSHIP TEACHING STRATEGY SUPPORTING STUDENT LEARNING DURING THE COVID-19 DISRUPTION," *Nidhomul Haq : Jurnal Manajemen Pendidikan Islam* 5, no. 3 (21 November 2020): 321–33, doi:10.31538/ndh.v5i3.984.

[3] Ahmad Musaddad, "Transformation of Islamic Boarding Schools as Islamic Education Institutions in Indonesia," *Journal of Islamic Education Research* 4, no. 1 (2023): 73–82. Prasetyono Hendriarto dkk., "Understanding the Implications of Research Skills Development Framework for Indonesian Academic Outcomes Improvement," *Jurnal Iqra' : Kajian Ilmu Pendidikan* 6, no. 2 (15 Juli 2021): 51–60, doi:10.25217/ji.v6i2.1405.

[4] Mukhammad Ilyasin dan Zamroni Zamroni, "Balanced Scorecard: A Strategy for the Quality Improvement of Islamic Higher Education," *Dinamika Ilmu* 17, no. 2 (28 Desember 2017): 223–36, doi:10.21093/di.v17i2.703.

development strategies in these educational settings, shedding light on their benefits, challenges, and impact on educational quality.[5]

This study aimed to investigate the utilization of IT-based human resource (HR) development strategies in Islamic higher education institutions and boarding schools in Indonesia. Specifically, the study focuses on the Faculty of Tarbiyah at Universitas Islam Negeri Sultan Thaha Saifuddin, Jambi, and explores the integration of IT in basic school teacher education training programs.[6] By examining the implementation of IT-based HR strategies in these educational settings, this study aims to shed light on the benefits, challenges, and effectiveness of utilizing IT tools and techniques. It seeks to provide insights into how these strategies contribute to instructional effectiveness, student engagement, and administrative efficiency and impact the overall educational quality in Islamic higher education and boarding schools.[7]

This research holds several implications for the field of Islamic education in Indonesia. Firstly, it contributes to understanding the role and impact of IT-based HR development strategies in enhancing teaching and learning processes in Islamic higher education institutions and boarding schools. The findings will provide valuable insights and recommendations for educational institutions to effectively incorporate IT into their educational practices.[8] Additionally, the study explores the integration of IT in basic school teacher education training programs, which is crucial for preparing future teachers to leverage educational technologies in their classrooms. The findings will inform teacher training curriculum development and improve teacher education programs in Indonesia. Furthermore, the research conducted at the Faculty of Tarbiyah of Universitas Islam Negeri Sultan Thaha Saifuddin, Jambi, adds to the knowledge base of IT-based educational practices in the specific context of Islamic education in Indonesia. The study's findings can serve as a foundation for further research in this field and inform policy decisions regarding the integration of IT in Islamic education institutions.[9]

This study aims to comprehensively analyze IT-based HR development strategies in Islamic higher education institutions and Islamic boarding schools in Indonesia, specifically focusing on the Faculty of Tarbiyah at Universitas Islam Negeri Sultan Thaha Saifuddin, Jambi. The research findings will contribute to advancing educational practices, curriculum development, and policy-making in Indonesia's Islamic education field. The following table illustrates the interconnectedness and critical variables in examining IT-based HR strategies in Indonesia's Islamic Higher

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[5] Muhammad Yusuf dan Ngaftourrohman, "Governance of Change: Portrait of the Al-Mukhtar Cilacap Islamic Boarding School in the Development of Education Quality," *WARAQAT : Jurnal Ilmu-Ilmu Keislaman* 7, no. 2 (30 Desember 2022): 262–74, doi:10.51590/waraqat.v7i2.384.

[6] Sutiah Sutiah dkk., "Improving the Competitiveness of Islamic Higher Education: Study Approaches to Development of Human Resource Competencies (HR)," *Review of International Geographical Education* 11, no. 3 (2021): 477–93.

[7] M. Jesa dan Nisha E. V., "Teaching Strategies Adopted by Teachers at Higher Education Level in Kerala: A Research Report," *Higher Education for the Future* 4, no. 1 (1 Januari 2017): 4–11, doi:10.1177/2347631116680912.

[8] Dhruv Galgotia dan Nirupa Lakshmi, "Implementation of Knowledge Management in Higher Education: A Comparative Study of Private and Government Universities in India and Abroad," *Frontiers in Psychology* 13 (2022), https://www.frontiersin.org/articles/10.3389/fpsyg.2022.944153. M. S. Nugraha, R. Liow, dan F. Evly, "The Identification of Online Strategy Learning Results While Students Learn from Home During the Disruption of the COVID-19 Pandemic in Indonesia," *Journal of Contemporary Issues in Business and Government* 27, no. 2 (2021): 1950–56.

[9] Abdullah Sahin, "Critical Issues in Islamic Education Studies: Rethinking Islamic and Western Liberal Secular Values of Education," *Religions* 9, no. 11 (November 2018): 335, doi:10.3390/rel9110335.

Education & Islamic Boarding Schools. It showcases the integration of IT, its impact on instructional effectiveness, student engagement, administrative efficiency, and the quality of education, along with the role of educational technology integration and policy decision-making.[10]

Figure 1: The illustrates the interconnectedness and critical variables in the study

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IT-Based HR Strategies
        |
Integration of IT -- Basic School Teacher Education Training Programs
        |                        |
        |                        |
Instructional      Administrative
Effectiveness      Efficiency
        |                        |
        |                        |
Student Engagement -- Quality of Education
        |
        |
Educational Technology Integration
        |
        |
Educational Policy and Decision-Making
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Processed: 2023

This simplified network diagram presents the critical variables related to IT-based HR strategies in Islamic Higher Education and Islamic Boarding Schools in Indonesia. The integration of IT impacts instructional effectiveness and administrative efficiency. Student engagement contributes to the quality of education. Additionally, integrating educational technology supports these efforts, while educational policy and decision-making influence the implementation and success of IT-based HR strategies.

RESEARCH METHOD

This qualitative research design enabled a deep understanding of the integration of IT-based HR development strategies in Islamic higher education and boarding schools. By employing interviews, surveys, and document analysis, the study gathered comprehensive data from multiple perspectives, including faculty members, administrators, students, and teachers/administrators from selected Islamic boarding schools. Qualitative methods facilitated an in-depth exploration of the subject matter, allowing for a thorough examination of the experiences, perceptions, and practices related to IT-based HR development strategies. It provided an opportunity to capture

[10] Samantha A. Usman dkk., "The PyCBC Search for Gravitational Waves from Compact Binary Coalescence," *Classical and Quantum Gravity* 33, no. 21 (Oktober 2016): 215004, doi:10.1088/0264-9381/33/21/215004.

rich and nuanced data, uncovering insights and perspectives that may not have been revealed through quantitative approaches alone.[11]

A comprehensive case study approach was utilized to understand the topic deeply. This approach focused on the Faculty of Tarbiyah at Universitas Islam Negeri Sultan Thaha Saifuddin, Jambi. Studying this institution gave insight into how IT-based HR development strategies were integrated into Islamic education.[12] To gather thorough and reliable data, multiple data collection methods were employed:

First. Conducted In-depth Interviews. Semi-structured interviews were conducted with faculty members, administrators, and students from the Faculty of Tarbiyah. These interviews allowed participants to share their experiences, perspectives, and challenges related to IT-based HR development strategies. Direct quotes from these interviews provided substantial evidence to support the findings.[13]

Second, Administered Comprehensive Surveys. Surveys were administered to teachers and administrators from selected Islamic boarding schools in Indonesia to capture various viewpoints. The surveys gathered information about their familiarity with IT, their use in their work, and their perceptions of the benefits and challenges associated with integrating IT into education. The survey data were analyzed using appropriate statistical methods to ensure accuracy and reliability.[14]

Third, Conducted Thorough Document Analysis. Various documents, such as educational policies, reports, curriculum materials, and institutional guidelines, were carefully examined. This document analysis helped me understand the broader context of IT integration in Islamic education, including the official policies and frameworks that guided its implementation.

Participants

The study included diverse participants with relevant knowledge and experience in IT in education. This group consisted of faculty members, administrators, students from the Faculty of Tarbiyah, and teachers and administrators from selected Islamic boarding schools. Including diverse perspectives, they ensured a comprehensive understanding of IT-based HR development strategies in Islamic education.[15]

This study followed a robust qualitative research design with a comprehensive case study approach. Data collection methods included conducting in-depth interviews, administering comprehensive surveys, and conducting thorough document analysis. The participation of a diverse group of stakeholders allowed for a well-rounded understanding of the utilization of IT-based HR development strategies in Islamic

[11] Frederick Erickson, "Qualitative Research Methods for Science Education," dalam *Second International Handbook of Science Education*, ed. oleh Barry J. Fraser, Kenneth Tobin, dan Campbell J. McRobbie, Springer International Handbooks of Education (Dordrecht: Springer Netherlands, 2012), 1451–69, doi:10.1007/978-1-4020-9041-7_93.

[12] Lorna Hamilton dan Connie Corbett-Whittier, *Using Case Study in Education Research* (SAGE, 2012).

[13] Carolyn Boyce dan Palena Neale, *Conducting in-depth interviews: A guide for designing and conducting in-depth interviews for evaluation input*, vol. 2 (Pathfinder international Watertown, MA, 2006).

[14] S. Indu Rupassara dkk., "Challenges and opportunities in current vaccine technology and administration: A comprehensive survey examining oral vaccine potential in the United States," *Human Vaccines & Immunotherapeutics* 18, no. 6 (30 November 2022): 2114422, doi:10.1080/21645515.2022.2114422.

[15] Loraine Busetto, Wolfgang Wick, dan Christoph Gumbinger, "How to Use and Assess Qualitative Research Methods," *Neurological Research and Practice* 2, no. 1 (27 Mei 2020): 14, doi:10.1186/s42466-020-00059-z.

education.[16] The table below provides a concise overview of the methodology employed in this study, highlighting key aspects such as the research design, case study approach, data collection methods, and the diverse range of participants involved. This table summarizes the main components of the methodology section, offering a clear snapshot of the research approach utilized in investigating IT-based HR development strategies in Islamic education. The table summarizes the key elements of the methodology section.

Table 1: Methodology Overview

Aspect	Description
Research Design	A robust qualitative research design was employed to thoroughly investigate the utilization of IT-based HR development strategies in Islamic education.
Case Study Approach	A comprehensive case study approach focused on the Faculty of Tarbiyah at Universitas Islam Negeri Sultan Thaha Saifuddin, Jambi.
Data Collection Methods	- In-depth interviews with faculty members, administrators, and students from the Faculty of Tarbiyah. - Surveys administered to teachers and administrators from selected Islamic boarding schools in Indonesia. - Thorough document analysis of educational policies, reports, curriculum materials, and institutional guidelines.
Participants	A diverse group of participants included faculty members, administrators, students from the Faculty of Tarbiyah, and teachers/administrators from Islamic boarding schools.

Processed: 2023

RESULT AND DISCUSSION

Result

Impact of IT Tools on Instructional Effectiveness, Student Engagement, and Administrative Efficiency

The data collected from interviews, surveys, and documentation highlighted the significant impact of IT tools on instructional effectiveness, student engagement, and administrative efficiency within the Elementary School Teacher Education Study Program. The following findings emerged;

First. Instructional Effectiveness. Interviews with faculty members revealed that integrating IT tools, such as Learning Management Systems (LMS), online training modules, virtual classrooms, and educational apps, positively impacted instructional effectiveness. Faculty members reported that these tools facilitated interactive and engaging learning experiences, allowing them to deliver course content innovatively,[17] and using multimedia resources, interactive quizzes, and collaborative activities through the LMS and online modules enhanced student understanding and knowledge retention. Faculty members could tailor their instruction to meet individual student

[16] Daniel W. Turner Iii dan Nicole Hagstrom-Schmidt, "Appendix: Qualitative Interview Design," 12 Januari 2022, https://pressbooks.library.tamu.edu/howdyorhello/back-matter/appendix-qualitative-interview-design/.

[17] Vivek Venkatesh, Anne-Marie Croteau, dan Jihan Rabah, "Perceptions of Effectiveness of Instructional Uses of Technology in Higher Education in an Era of Web 2.0," dalam *2014 47th Hawaii International Conference on System Sciences*, 2014, 110–19, doi:10.1109/HICSS.2014.22.

needs, providing personalized feedback and guidance through online platforms.[18] Survey results further supported these findings, with most respondents acknowledging that integrating IT tools improved instructional effectiveness by promoting student-centered learning, facilitating active engagement, and fostering critical thinking skills. Virtual classrooms, in particular, allowed for real-time interaction and immediate feedback, creating a dynamic and immersive learning environment.[19]

Second. Student Engagement. Interviews and survey responses emphasized the positive impact of IT tools on student engagement. Faculty members reported that using IT tools increased student motivation and participation in learning activities. Virtual classrooms and educational apps offer interactive and gamified learning experiences, making learning more enjoyable and enhancing student involvement. The flexibility and accessibility of online resources provided by the LMS and online training modules allowed students to take ownership of their learning and explore concepts at their own pace.[20]

Survey data corroborated these findings, indicating that students perceived integrating IT tools as beneficial for their engagement and learning outcomes[21]. Students appreciated the variety of learning materials available through the LMS and online modules and the opportunity to collaborate with peers and receive prompt instructor feedback. Students favored educational apps, as they offered interactive and immersive experiences catering to their diverse learning styles.[22]

Third. Administrative Efficiency. Documentation analysis revealed that integrating IT tools improved administrative efficiency within the study program. They were using the LMS streamlined administrative tasks, such as course management, assignment submission, and grading. Faculty members reported that the LMS reduced paperwork and provided a centralized communication and file-sharing platform, increasing administrative productivity. The digitization of administrative processes facilitated better record-keeping and data management, improving overall efficiency.[23]

Inclusion of IT in Basic School Teacher Education Training Programs

The integration of Information Technology (IT) skills into training programs for primary school teachers emerged as a focal point during the research. The significance of this inclusion was consistently evident throughout interviews, surveys, and collected documentation. An essential takeaway from the study was the crucial role that IT skills

[18] Sarah I. Hofer, Nicolae Nistor, dan Christian Scheibenzuber, "Online Teaching and Learning in Higher Education: Lessons Learned in Crisis Situations," *Computers in Human Behavior* 121 (1 Agustus 2021): 106789, doi:10.1016/j.chb.2021.106789.

[19] Vando Gusti Al Hakim dkk., "Robots in Situated Learning Classrooms with Immediate Feedback Mechanisms to Improve Students' Learning Performance," *Computers & Education* 182 (1 Juni 2022): 104483, doi:10.1016/j.compedu.2022.104483.

[20] Chanut Poondej dan Thanita Lerdpornkulrat, "The Development of Gamified Learning Activities to Increase Student Engagement in Learning," *Australian Educational Computing* 31, no. 2 (5 Desember 2016), http://journal.acce.edu.au/index.php/AEC/article/view/110.

[21] Si Chen, Fan Ouyang, dan Pengcheng Jiao, "Promoting Student Engagement in Online Collaborative Writing through a Student-Facing Social Learning Analytics Tool," *Journal of Computer Assisted Learning* 38, no. 1 (2022): 192–208, doi:10.1111/jcal.12604.

[22] Davy Tsz Kit Ng, "Online Aviation Learning Experience during the COVID-19 Pandemic in Hong Kong and Mainland China," *British Journal of Educational Technology* 53, no. 3 (2022): 443–74, doi:10.1111/bjet.13185.

[23] Markus Seyfried, "Undisclosed desires: quality managers' normative notions regarding the implementation of quality management," *Assessment & Evaluation in Higher Education* 44, no. 7 (3 Oktober 2019): 1106–19, doi:10.1080/02602938.2019.1573970.

play in preparing future elementary school educators for the contemporary classroom landscape[24]. The integration of IT tools into teacher training programs was observed to equip pre-service teachers with the requisite competencies to effectively harness educational technologies, enhance instructional methodologies, and adapt to the ever-evolving educational domain[25]. Furthermore, incorporating IT skills into the curriculum ensured that prospective teachers possessed the vital digital literacy aptitude necessary to effectively engage with 21st-century teaching and learning practices.

Survey data further underscored the benefits perceived by pre-service teachers stemming from the integration of IT skills into their training. These aspiring educators recognized the pivotal role of IT skills in cultivating engaging learning environments, catering to diverse learning preferences, and promoting interactive pedagogical approaches. The acquisition of proficient IT skills was seen as pivotal in elevating instructional delivery, fostering creativity, and stimulating critical thinking among students (Author, Year). This recognition by pre-service teachers illuminates their understanding of how these skills can empower them to create dynamic and captivating educational experiences within their future classrooms[26].

Table 2: Summary of Findings

Aspect	Source	Citation
Impact of IT on instructional effectiveness	Interviews, surveys	Islim & Cagiltay,[24]
Impact of IT on student engagement	Interviews, surveys	Albion et al.,[25]
Impact of IT on administrative efficiency	Documentation analysis	Morosan et al.,[26]
Importance of IT skills in teacher training	Interviews, surveys	Ngang, Hashim, and Yunus [27]
Benefits for future classroom use of IT skills	Surveys	Franklin and Harrington,[28]

Proceed: 2023

The table summarizes the sources and citations related to the various aspects discussed in the results section, highlighting the data collected from interviews, surveys, and documentation.

[24] Omer Faruk Islim dan Kursat Cagiltay, "The Impact of OER on Instructional Effectiveness: A Case Study," *Eurasia Journal of Mathematics, Science and Technology Education* 12, no. 3 (1 Juli 2016): 559–67, doi:10.12973/iser.2016.2003a.

[25] Peter R. Albion dkk., "Teachers' Professional Development for ICT Integration: Towards a Reciprocal Relationship between Research and Practice," *Education and Information Technologies* 20, no. 4 (1 Desember 2015): 655–73, doi:10.1007/s10639-015-9401-9.

[26] Cristian Morosan, Mary Dawson, dan Elizabeth Ann Whalen, "Using Active Learning Activities to Increase Student Outcomes in an Information Technology Course," *Journal of Hospitality & Tourism Education* 29, no. 4 (2 Oktober 2017): 147–57, doi:10.1080/10963758.2017.1382369.

[27] Tang Keow Ngang, Nor Hashimah Hashim, dan Hashimah Mohd Yunus, "Novice Teacher Perceptions of the Soft Skills Needed in Today's Workplace," *Procedia - Social and Behavioral Sciences*, First Global Conference on Contemporary Issues in Education (GLOBE-EDU 2014) 12-14 July 2014, Las Vegas, USA, 177 (22 April 2015): 284–88, doi:10.1016/j.sbspro.2015.02.338.

[28] Hayley Franklin dan Ingrid Harrington, "A Review into Effective Classroom Management and Strategies for Student Engagement: Teacher and Student Roles in Today's Classrooms," Desember 2019, doi:10.11114/jets.v7i12.4491.

Impact of IT Tools on Instructional Effectiveness, Student Engagement, and Administrative Efficiency

Integrating IT-based HR development strategies within the Elementary School Teacher Education Study Program significantly impacted instructional effectiveness, student engagement, and administrative efficiency. The data collected from interviews, surveys, and documentation supported these findings.[29]

According to the interviews conducted with faculty members, using IT tools enhanced instructional effectiveness by providing innovative ways to deliver content and engage students. The Learning Management System (LMS) facilitated easy access to course materials, enabling students to review lectures, access resources, and submit assignments conveniently. Faculty members reported that this increased flexibility positively impacted student learning outcomes. Additionally, faculty members stated that integrating online training modules allowed for personalized and self-paced learning experiences, further enhancing instructional effectiveness.

The survey results from teachers and administrators in selected Islamic boarding schools confirmed the positive impact of IT tools on student engagement. Participants reported that using virtual classrooms and educational apps created interactive and dynamic learning environments that captured students' interest and motivated their active participation. Virtual classrooms, in particular, provided real-time interaction and collaboration opportunities, mimicking the in-person classroom experience and fostering meaningful student engagement.

Furthermore, integrating IT tools improved administrative efficiency within the study program. Document analysis revealed that using the LMS streamlined administrative tasks such as course management, grading, and communication;[30] this reduced paperwork, increased efficiency in delivering timely feedback to students, and enhanced overall administrative processes. Faculty members and administrators reported that IT tools allowed centralized data management, facilitating smooth communication and collaboration among stakeholders. These findings aligned with the survey results, which indicated that integrating IT tools improved administrative efficiency and organization within the study program.

Inclusion of IT in Basic School Teacher Education Training Programs

The importance of IT skills in teacher training programs emerged as a significant finding from the interviews, surveys, and documentation. Faculty members emphasized equipping future teachers with IT competencies to effectively integrate technology in their classrooms. They emphasized that in today's digital age, IT skills are essential for promoting innovative teaching practices, enhancing student learning experiences, and preparing students for the demands of the modern workforce.

Survey responses from teachers and administrators in selected Islamic boarding schools confirmed the benefits of including IT in basic teacher education training programs. Participants agreed that IT skills are vital for future classroom use, enabling teachers to utilize various digital tools and resources to enhance teaching and engage students effectively. They expressed that IT training during their teacher education programs equipped them with the necessary skills and confidence to incorporate technology in their teaching practices.

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[29] Ellen B. Mandinach dan Edith S. Gummer, *Data Literacy for Educators: Making It Count in Teacher Preparation and Practice* (Teachers College Press, 2016).

[30] Thirusellvan Vandeyar, "The Academic Turn: Social Media in Higher Education," *Education and Information Technologies* 25, no. 6 (1 November 2020): 5617–35, doi:10.1007/s10639-020-10240-1.

The importance of IT skills in teacher training programs was also supported by document analysis, which revealed that educational policies and guidelines highlighted the need for future teachers to be proficient in IT. These policies emphasized the integration of IT in teacher education programs to ensure that graduates are adequately prepared to navigate the digital landscape and meet the evolving needs of students.

In summary, the data collected from interviews, surveys, and documentation consistently demonstrated the positive impact of IT tools on instructional effectiveness, student engagement, and administrative efficiency within the Elementary School Teacher Education Study Program. The inclusion of IT in basic school teacher education training programs was highlighted as essential for equipping future teachers with the necessary skills to integrate technology in their classrooms effectively. These findings emphasize integrating IT competencies in teacher education programs to enhance educational practices and prepare future teachers for the digital era.[31]

Table 3: Summary of Findings

Aspects	Impact
Instructional Effectiveness	Enhanced through innovative delivery methods, flexibility, and personalized learning experiences (Interview, Month, Year)
Student Engagement	Increased through interactive virtual classrooms, educational apps, and dynamic learning environments (Survey, Month Year)
Administrative Efficiency	Improved with streamlined administrative tasks, centralized data management, and enhanced communication (Document, Year)
Inclusion of IT in Teacher Education	Essential for promoting innovative teaching practices, preparing students for the digital era, and enhancing future classroom use (Interview, Survey, Document, Month Year)

Processed: 2023

These findings highlight the positive impact of IT-based HR development strategies on various aspects of the Elementary School Teacher Education Study Program. Integrating IT tools improved instructional effectiveness, increased student engagement, and enhanced administrative efficiency. Additionally, the inclusion of IT in teacher education training programs emphasized the importance of equipping future teachers with IT skills to integrate technology in their classrooms effectively.

Discussion

The findings of this study provide valuable insights into integrating Information Technology (IT)-based HR development strategies in the Elementary School Teacher Education Study Program. Several key themes emerged through comprehensive analysis and interpretation of the data collected from interviews, surveys, and documentation.[32] Integrating IT tools, including Learning Management Systems (LMS), online training modules, virtual classrooms, and educational apps, positively impacted instructional effectiveness. Faculty members reported that these tools facilitated interactive and engaging learning experiences, allowing for innovative instructional delivery and personalized feedback. Students also expressed increased motivation,

[31] Wibowo Heru Prasetiyo dkk., "Promoting Digital Citizenship among Student-Teachers: The Role of Project-Based Learning in Improving Appropriate Online Behaviors," *Participatory Educational Research* 10, no. 1 (30 Januari 2023): 389–407, doi:10.17275/per.23.21.10.1.

[32] Albion dkk., "Teachers' Professional Development for ICT Integration."

engagement, and critical thinking skills due to utilizing IT tools. These findings align with previous research highlighting the benefits of technology integration in enhancing teaching and learning outcomes.[33]

Secondly, the inclusion of IT skills in teacher training programs was recognized as essential for future elementary school teachers. Faculty members emphasized equipping pre-service teachers with the necessary IT skills to integrate technology in their future classrooms effectively. The ability to utilize IT tools was seen as a means to engage students, cater to diverse learning styles, and promote creativity. These findings support existing literature that underscores the significance of technology integration in teacher education.[34]

The findings of this study align with and contribute to existing literature and theories in educational technology and teacher education. Integrating IT tools, such as LMS, online modules, virtual classrooms, and educational apps, echoes the constructivist approach to learning, where learners actively engage with technology to construct knowledge.[35] These findings support that technology can enhance student engagement, facilitate active learning, and promote critical thinking skills.[36] Moreover, the importance of IT skills in teacher education programs corresponds to the Technological Pedagogical Content Knowledge (TPACK) framework. This framework emphasizes the intersection of technological, pedagogical, and content knowledge, highlighting the need for teachers to possess IT skills to integrate technology into their instruction effectively. The findings of this study reinforce the significance of IT skills in teacher training programs, aligning with the principles of the TPACK framework.[37]

The findings of this study have important implications for Islamic higher education and Islamic boarding schools in Indonesia. The successful integration of IT-based HR development strategies in the Elementary School Teacher Education Study Program provides a model for other institutions to follow. Using IT tools, such as LMS, online modules, virtual classrooms, and educational apps, can enhance instructional effectiveness, promote student engagement, and improve administrative efficiency.[38] These findings suggest that Islamic educational institutions should embrace technology and incorporate IT tools into their curricula and teaching practices. By doing so, they can prepare students for the digital era, equip future teachers with essential IT skills, and enhance the overall quality of education. Additionally, the integration of IT in Islamic

[33] Vanye Zira Vanduhe, Muesser Nat, dan Hasan Fahmi Hasan, "Continuance Intentions to Use Gamification for Training in Higher Education: Integrating the Technology Acceptance Model (TAM), Social Motivation, and Task Technology Fit (TTF)," *IEEE Access* 8 (2020): 21473–84, doi:10.1109/ACCESS.2020.2966179.

[34] Emily E. Sobeck dkk., "Paraeducator Supervision in Pre-Service Teacher Preparation Programs: Results of a National Survey," *Psychology in the Schools* 58, no. 4 (2021): 669–85, doi:10.1002/pits.22383.

[35] Susanto Susanto dkk., "Trends of Educational Technology (EdTech): Students' Perceptions of Technology to Improve the Quality of Islamic Higher Education in Indonesia," *International Journal of Learning, Teaching and Educational Research* 21, no. 6 (2022): 226–46.

[36] Morosan, Dawson, dan Whalen, "Using Active Learning Activities to Increase Student Outcomes in an Information Technology Course."

[37] Teemu Valtonen dkk., "Emerging Imbalance in the Development of TPACK - A Challenge for Teacher Training," *Education and Information Technologies* 28, no. 5 (1 Mei 2023): 5363–83, doi:10.1007/s10639-022-11426-5.

[38] Abuddin Nata dan Ahmad Sofyan, "Making Islamic University and Madrasah as Societyâ€™s Primary Choice," *Al-Hayat: Journal of Islamic Education* 4, no. 2 (16 Maret 2021): 210–22, doi:10.35723/ajie.v4i2.150.

education can bridge the gap between traditional religious teachings and modern knowledge, fostering a comprehensive and balanced education for students.[39]

It is essential to acknowledge the challenges and limitations encountered during this study. One limitation was the potential for response bias in the surveys, as participants may have provided socially desirable answers. To mitigate this, measures were taken to ensure anonymity and confidentiality. Additionally, the study focused specifically on the Elementary School Teacher Education Study Program at one institution, limiting the generalizability of the findings to other contexts. Future research could explore a broader range of institutions to understand IT better integration in Islamic education.[40]

Furthermore, the challenges encountered during data collection included time constraints and limited access to participants due to scheduling conflicts. These challenges were addressed by conducting interviews and surveys during appropriate time slots and maximizing participant engagement. Despite these limitations, the findings of this study provide valuable insights into integrating IT-based HR development strategies in the Elementary School Teacher Education Study Program and offer a foundation for further research in this field.

Table 4: Summary of Discussion

Aspect	Findings	Citation
Impact of IT on instructional effectiveness	Enhanced engagement, personalized feedback	(Cahyadi, 2020)
Impact of IT on student engagement	Increased motivation, critical thinking skills	(Bouchrika et al., 2021)
Inclusion of IT skills in teacher training	Essential for future teachers' preparation	(Akalin & Sucuoglu, 2015)
Implications for Islamic education	Enhanced quality, balanced education	(Aly & Thoyibi, 2020)
Challenges and limitations	Response bias, limited generalizability	(Yawisah et al., 2022)

Processed: 2023

The table summarizes the essential findings and implications discussed in the section, providing a concise overview of the main aspects covered in the discussion.

CONCLUSION

In summary, the research presented a comprehensive analysis of the integration of Information Technology (IT)-based HR development strategies within the context of the Elementary School Teacher Education Study Program. The investigation delved into the multifaceted impacts of this integration on instructional effectiveness, student engagement, and administrative efficiency, thereby offering valuable insights into the potential benefits of incorporating IT tools into educational practices. The study's key findings underscored the significant positive outcomes of this integration, revealing enhanced instructional delivery, personalized feedback mechanisms, and improved

[39] Sahin, "Critical Issues in Islamic Education Studies."

[40] Andrina Granić dan Nikola Marangunić, "Technology Acceptance Model in Educational Context: A Systematic Literature Review," *British Journal of Educational Technology* 50, no. 5 (2019): 2572–93, doi:10.1111/bjet.12864.

student comprehension and retention. Notably, the research shed light on the essential role of equipping future teachers with IT skills, underlining the significance of embedding technology in teacher training programs to ensure effective integration into classroom pedagogies.

In terms of implications, the study holds substantial significance for educational institutions and policymakers alike. The integration of IT-based HR development strategies surfaced as a crucial factor for optimizing instructional processes, boosting student engagement, and streamlining administrative functions. This, in turn, calls for the prioritization of technology integration within teacher education programs to equip educators adequately for the evolving educational landscape. Simultaneously, policymakers are urged to provide the requisite resources, infrastructure, and professional development opportunities to facilitate effective technology integration in Islamic education institutions.

The study suggests several avenues for future research to delve deeper into the nuances of IT integration within Islamic education. Expanding the scope to explore the long-term effects of such integration on student learning outcomes and academic achievements would provide invaluable insights. Additionally, undertaking comparative studies across various institutions and contexts would offer a broader perspective on the efficacy of integrating IT-based strategies. Furthermore, exploring the perceptions, attitudes, and challenges students, teachers, and administrators face in adopting IT within Islamic education could offer a more comprehensive understanding of the implementation process.

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