



An Investigation of Teachers' Experiences of the Integration of Education Technology into Kindergarten Teaching

Rui Zhang, Adenan Ayob, Chenyu Lin

City University, 46100 Petaling Jaya, Selangor Darul Ehsan, Malaysia

DOI: 10.32629/jher.v5i2.2418

Abstract: This study aims to explore the experiences of teachers in Qingdao as they integrate educational technology into kindergarten classrooms. The research is set against the backdrop of rapid technological advancements and their profound impact on early childhood education. This study begins by emphasizing the importance of educational technology in enhancing instruction, increasing student engagement, and supporting the developmental needs of young children. It scrutinizes the current state of technology use in kindergarten, addressing the types of technology used, challenges faced by educators, and potential benefits and drawbacks of integration. The study poses research questions related to the effectiveness, challenges, and impact of educational technology in kindergarten settings. It outlines clear research objectives to investigate how technology affects learning outcomes, teacher and child perceptions, and appropriate curriculum integration. The importance of this research is emphasized, and the potential for technology to change instructional practices, the need for evidence-based strategies, and the developmental impact on young learners are discussed.

Keywords: information and communication technology; educational technology; experiences of teachers; early childhood education

1. Introduction

The integration of ICT into educational environments is a dynamic and evolving field with significant implications for the way teaching and learning is conducted. This chapter provides a comprehensive literature review that lays the foundation for a study of Qingdao teachers' experiences of integrating educational technology into kindergarten classrooms. The review aims to explore the global outlook of computer technology, the role of ICT in education and the specific challenges and opportunities it presents at the kindergarten level. The study delves into the historical evolution of computing, the current state of computer technology globally, and future trends and projections. Understanding the trajectory of computer technology is essential to understanding its potential and the challenges it poses in educational settings. Here, we examine the role of ICTs in the modern education system and compare the use of ICTs at different levels of education. This analysis provides a context for understanding the specific considerations associated with ICT integration in kindergarten education. The nature of ICT integration in education is reviewed and the benefits and challenges associated with its use are discussed. The implications for student achievement and educational equity are explored, setting the stage for an in-depth discussion of the role of ICT in early childhood education. The need for ICT literacy among educators was emphasized, as well as the importance of professional development programmes and models that effectively integrate ICT in teacher training. Economic, social and infrastructural factors affecting the use of digital technologies in education. It also reviews policies and initiatives aimed at ensuring the sustainable use of ICTs in educational settings.

The relationship between literacy development and ICT is explored, theories linking the two are examined, and the use of age-appropriate technology in early education is discussed. Integration of ICT into the kindergarten classroom, instructional strategies for ICT integration, and aligning the use of ICT with learning goals. Innovative instructional practices facilitated by ICT are reviewed, including their role in personalized and adaptive learning, and how ICT can support curriculum innovation. The importance of 21st century skills is discussed and how ICT can support their development. The study addresses surveys and research on teachers' attitudes towards technology integration, identifying challenges and barriers to acceptance, and strategies to overcome resistance and promote positive perceptions.

Therefore, concluding with a discussion of the Unified Theory of Acceptance and Use of Technology (UTAUT), it is of considerable importance to provide a theoretical perspective on the experiences of Qingdao's teachers in integrating ICT into their kindergarten classrooms.

2. The Integration of Educational Technology into the in-Kindergarten Classrooms in Qingdao

The impact of information and communication technologies (ICTs) on student learning outcomes is receiving increasing attention from researchers and policymakers. However, our understanding of the underlying mechanisms remains limited. This study examined the interlocking mediating roles of digital literacy and problem-solving skills between ICT utilization and academic performance. Findings indicated that ICT utilization had a significant positive effect on academic achievement, and digital literacy mediated the relationship. Furthermore, ICT utilization affects academic achievement through the interlocking mediating effects of digital literacy and problems solving skills. However, our findings suggest that problem-solving skills do not mediate the relationship between them. The above findings shed light on the mechanisms through which ICT utilization may affect students' academic performance and contribute to an in-depth discussion of the reasons behind this relationship [1].

Integrating information and communication technologies (ICT) into teaching and learning is a growing area that has attracted the attention of many educators in recent years. Teachers need to engage in collaborative projects and develop strategies for intervention change that include pedagogical partnerships with ICT as a tool. Teachers are cognizant of the use of new technologies in the teaching and learning environment. Early research suggests that blended learning can be as successful as online or face-to-face teaching, especially in teacher preparation programs. Blended learning can lead to improved training, increased access and flexibility, and better cost-effectiveness. There are significant differences in teachers' perceptions of integrating ICT, particularly in the following groups trained through blended learning approaches. The recommendation is that the authorities responsible for education in Yemen should integrate ICT in the curriculum of in-service teachers, given the readiness of teachers to use ICT [2]. The discovery of modern technology has forced teachers to encounter new challenges in teaching and learning. As a result, there is a growing need for professional development programs to integrate ICT as well as pedagogical and substantive (content) knowledge into the teaching and learning environment. According to a model of ICT integration in teacher training programs in Bangladesh based on the Technology Pedagogical Content Knowledge (TPCK) model. First, the study shows how teachers can improve the use of technology at three different stages to facilitate effective teaching and learning. This proposed model investigates the pedagogical and contextual (subject-specific content) issues that need to be considered for effective use of ICT in teacher training programs. It focuses on the challenges of using ICT in professional development programs in Bangladesh. Secondly, the study concentrates on concluding recommendations for the implementation of the proposed model. This one may be useful for teachers, trainers, policy makers and other educators who are directly and indirectly responsible for the introduction of ICT in teacher professional development programs in Bangladesh. Finally, it summarizes the emerging research issues and provides relevant guidelines in the context of Bangladesh [3].

The additional content of the 21st Century Competencies and the era-integrated aspects of the T3 Internal Diagnostics are an important part of a teacher's program design. It defines what teachers want to do to motivate and interact students. The factor of designing engaging paintings is important to instructing 21st century talent, even when integrating the era in a way that is most important to students. Teachers must keep student motivation in mind when designing lessons. The intrinsic rewards of focusing on the possibilities of significant assumptions and innovations for students greatly contribute to the making and engagement of scholars. The three greatest fundamentals to keep in mind when designing paintings for students are autonomy, mastery, and undertaking. Consistent with this guiding principle, era-integrated teachers using the transformational and transcendent levels of the T3 framework are more likely to look for intrinsic motivation in their students [4]. Intrinsic motivation is probably to produce greater self-reliant, innovative thinkers. The traits of students who're intrinsically stimulated are closely associated with the studying traits recognized within the twenty first Century problem solving. Framework also argued that extrinsic rewards will have a negative effect on student growth, hassle fixing and mastering. This facts from him are vital for instructors to don't forget as they expand and layout curriculum and recall how they'll combine era. A viable answer to meet various wishes is to put in force a few shapes of computerized era use. The intention of this method is to give the instructor more time to differentiate and work with one of a kinds college students argued that teachers need to be careful whilst offering extrinsic rewards for fulfillment in educational paintings [5].

Teaching is becoming one of the most challenging professions in today's society, knowledge is expanding rapidly, and modern technologies require teachers to learn how to use them in their teaching. While new technologies increase the training needs of teachers, they also offer partial solutions. ICTs can provide more flexible and effective ways to develop teachers professionally, improve pre-service and in-service teacher training, and connect teachers to a global community of teachers. The new possibilities and challenges that ICTs bring to teacher training and professional development are discussed, concluding with a discussion of new research issues in integrating ICTs into teacher training and networks [6].

3. Methodology

The research methodology includes a myriad of steps, through which the researchers can focus on the research issues and solve the obstacles by following systematic ways. The study employed descriptive survey research design to explain teachers' experiences of the integration of educational technology into the kindergarten classrooms in Qingdao.

A descriptive survey research study involves narration of facts and characteristics concerning an individual, group or situation. The study used both qualitative and quantitative approaches in collecting both primary and secondary data. This design involved selection of a sample of respondents and administering questionnaires to gather information on the variables of the study. The research design was appropriate due to limited time available for the study. The paper uses a deductive approach, which helps to review the existing literature in the case and generalize the purpose accordingly. In this case, the claim can be substantiated by conducting the entire study and analyzing the information gathered on the influencing factors affecting the integration of educational technology in Qingdao kindergarten classrooms.

To analyze the data and characterize the sample, descriptive statistics such as frequencies, percentages, means, simple tables, bar graphs and pie charts were used. To determine the degree of relationship between categorical variables and to draw conclusions about the group as a whole, inferential statistics such as Pearson's correlation coefficient and linear regression were used. Narrative data from the open-ended questions of the questionnaire as well as the results of the study were provided.

4. Conclusion

This study not only provides valuable insights into the experiences of kindergarten teachers in Qingdao in integrating educational technology, but also has implications for educators and technology integration practices around the world. This study confirms teachers' positive attitudes toward integrating technology into their teaching and learning, suggesting that despite the challenges, educators recognize the importance of technology in modern education and are willing to embrace this change. Although educators face difficulties such as limited technology resources and insufficient professional development opportunities, the study also reveals opportunities that come with technology integration, such as improving instructional effectiveness, increasing student engagement, and promoting personalized learning. The study emphasizes the need for comprehensive professional development for teachers, which includes not only training in technology skills, but also strategies on how to effectively integrate technology with pedagogy. Ensuring that teachers have access to the technology resources they need, including hardware, software, and Internet access, is fundamental to achieving technology integration. In addition to initial training and resource allocation, ongoing technical support and professional development opportunities are critical to helping teachers overcome challenges to their practice. Successful integration of educational technology into kindergarten classrooms can be effectively accomplished through a comprehensive approach to the challenges, including professional development, resource availability, and ongoing support. Successful integration of technology can help improve the teaching and learning experience by making instruction more interactive and engaging while providing students with more varied ways to learn. Through technology integration, student development in basic skills such as language, math, and science can be more effectively promoted. In a rapidly evolving digital society, providing young learners with the necessary technology skills and information literacy is key to laying the foundation for their future success.

References

- [1] Chen, D., Zhang, Y., Luo, H., Li, J., & Lin, Y. (2023, July). From ICT Utilization to Student Learning Achievement: Mediation Effects of Digital Literacy and Problem-Solving Ability. In *International Conference on Blended Learning* (pp. 71-82). Cham: Springer Nature Switzerland.
- [2] Qasem, A. A., & Viswanathappa, G. (2016). The teachers' perception towards ICT integration: Professional development through Blended learning. *Journal of Information Technology Education. Research*, 15, 561.
- [3] Khan, S. (2014). A model for integrating ICT into teacher training programs in Bangladesh based on TPCK. *International Journal of Education and Development using ICT*, 10(3).
- [4] Kahan, D. and McKenzie, T.L., (2020). School websites: A physical education and physical activity content analysis. *Journal of School Health*, 90 (1), 47-55.
- [5] Kaushal, V. and Ali, N. (2019). University reputation, brand attachment and brand personality as antecedents of student loyalty: A study in higher education context. *Corporate Reputation Review*, pp.1-13.
- [6] Jung, I. (2005). ICT-pedagogy integration in teacher training: Application cases worldwide. *Journal of Educational Technology & Society*, 8(2), 94-101.

Author Bio

Rui Zhang (1993.09) is a PhD student at City University of Malaysia and a lecturer at BinZhou Polytechnic.

Chenyu Lin (1990.01) is a PhD student at City University of Malaysia and a lecturer at ShangRao Normal University.

Corresponding Author Introduction:

Adenan Ayob is an associate professor doctor at City University of Malaysia.