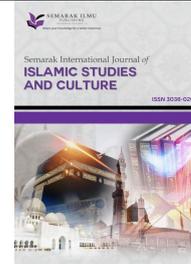




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The Effectiveness of the Puzzle it Out Method through a Game-Based Learning Approach for Teaching 21st Century Islamic Education among Teachers in Kuala Nerus

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ABSTRACT

Islamic Education in Malaysia frequently struggles with a heavy reliance on teacher-centred instruction, often resulting in passive learning and limited student engagement. These traditional methods stand in contrast to the goals of PAK21 and the Malaysia Education Blueprint (PPPM 2013–2025), which prioritise active, student-centred learning environments. This study examines the effectiveness of the Puzzle It Out method, a strategy using structured puzzles to promote inquiry-driven learning among teachers in Kuala Nerus. A quantitative research design was employed involving 100 Islamic Education teachers, with data collected via online questionnaires and analysed using descriptive statistics. The findings reveal a strong readiness for innovation among teachers, where 97% acknowledged the critical importance of PAK21 and 91% demonstrated solid knowledge of the Puzzle It Out method. Implementation levels were encouraging, with 82% of respondents reporting they have integrated game-based approaches into their lessons. In terms of impact, the results were overwhelmingly positive; between 96% and 99% of teachers agreed that the method significantly boosted student interest, sparked active interaction, and created a far more enjoyable learning atmosphere compared to traditional methods. In conclusion, the Puzzle It Out method proves to be an energetic and practical strategy that not only enhances teaching practices but also successfully bridges the gap between Islamic Education and 21st-century pedagogy.

1. Introduction

1.1 Background of the Study

The development of 21st-century education requires teachers to be increasingly creative and innovative in conducting the teaching and learning process (T&L). Islamic Education, as one of the core subjects in the national curriculum, is not exempt from this demand. Teachers are expected to

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transition from traditional, teacher-centered approaches to more interactive and student-centered pedagogies that can stimulate learners' interest and engagement with Islamic content. One of the pedagogical approaches that has gained increasing attention within 21st-century education is Game-Based Learning (GBL). This approach integrates elements of enjoyment, healthy competition, and challenge to enhance students' motivation and active participation in the learning process. Game-based learning not only creates a more engaging classroom environment but also facilitates a deeper and more practical understanding of Islamic concepts. Among the game-based methods that can be implemented in Islamic Education is the "Puzzle It Out" method, which involves puzzle-solving, matching, and concept-arrangement activities. This method encourages students to consolidate their understanding through collaboration and critical thinking. Despite the growing emphasis on game-based learning, its application in the teaching of Islamic Education remains relatively limited, particularly among teachers in the district of Kuala Nerus.

1.2 Problem Statement

Although the Ministry of Education Malaysia (MOE) has emphasized the importance of incorporating 21st-century learning skills such as collaboration, communication, critical thinking, and creativity, the implementation of these skills in Islamic Education remains heavily reliant on traditional methods such as lectures and rote memorization. Consequently, students often exhibit low levels of engagement and find it difficult to relate Islamic teachings to real-life contexts. Furthermore, there exists a common misconception that game-based approaches are suitable only for primary school pupils or light topics. Such approaches can be effectively adapted to Islamic Education, which is inherently value-oriented and practice-based. Hence, this study seeks to explore the extent to which the "Puzzle It Out" method, through a game-based learning approach, can enhance the effectiveness of 21st-century Islamic Education teaching among teachers in Kuala Nerus.

1.3 Research Objectives

This study was conducted with the following objectives: i. to examine the level of knowledge and understanding of Islamic Education teachers regarding the Puzzle It Out method; ii. to identify the extent of implementation of game-based learning approaches in the teaching of Islamic Education; iii. to evaluate the effectiveness of the Puzzle It Out method in enhancing 21st-century Islamic Education teaching practices among teachers in Kuala Nerus.

1.4 Research Questions

This research aims to investigate the current level of knowledge and understanding among Islamic Education teachers regarding the "Puzzle It Out" method, while also assessing the extent to which game-based learning is currently implemented within the curriculum. Furthermore, the study seeks to determine the effectiveness of the "Puzzle It Out" method in enhancing 21st-century Islamic Education teaching practices, specifically among teachers in Kuala Nerus.

1.5 Significance of the Study

This study is expected to provide meaningful contributions to several key stakeholders, primarily by serving as a source of inspiration and guidance for Islamic Education teachers to adopt more interactive, engaging, and student-centered approaches. Furthermore, the findings may assist School

Administrators and the District Education Office (PPD) in planning professional development programmes and workshops aimed at enhancing teachers' pedagogical competencies. Finally, the study offers a foundational reference point for future researchers investigating game-based learning within the context of Islamic Education and related pedagogical innovations.

1.6 Scope and Limitations of the Study

This study focuses on Islamic Education teachers in the district of Kuala Nerus, Terengganu. The respondents comprise secondary school teachers who teach Islamic Education as a core subject. The study specifically examines the effectiveness of the Puzzle It Out method in terms of teachers' knowledge, implementation practices, and its overall impact on 21st-century teaching and learning. However, the study is limited by the relatively small sample size and its focus on only one type of game-based learning method. Therefore, the findings may not be applicable to all contexts of Islamic Education teaching.

1.7 Definition of Terms

To this study, the "Puzzle It Out" method is defined as a pedagogical strategy that incorporates puzzle-solving, matching, and concept-arrangement activities designed to enhance students' comprehension through collaborative and critical thinking tasks. Contextualizing this within the broader framework, Game-Based Learning (GBL) refers to a teaching and learning approach that integrates elements such as challenges, rewards, and competition to achieve specific educational objectives and maximize learner engagement. Furthermore, 21st-Century Islamic Education is characterized as an approach that integrates higher-order thinking skills (HOTS), communication, collaboration, and creativity, ensuring alignment with the demands of contemporary education and global competency frameworks.

2. Literature Review

2.1 Game-Based Learning (GBL)

Approach in 21st Century Education Camilleri [5] said that Game-based learning (GBL) has emerged as an innovative educational method that uses the characteristics of games to enhance engagement and improve learning outcomes. This approach is grounded in Vygotsky's [17] constructivist learning theory (1978), which emphasizes social interaction and the zone of proximal development through game-based activities, in line with the demands of modern Islamic Education that integrates technology and innovative pedagogy [4]. Game-based learning has become a dominant pedagogical paradigm in the digital era where games not only increase students' intrinsic motivation but also cultivate 21st-century skills such as problem solving, collaboration, and critical thinking [16]. In Malaysia, the Secondary School Standard Curriculum (Kurikulum Standard Sekolah Menengah [KSSM]) initiative emphasizes innovative pedagogy, including GBL, for Islamic Education [9]. In the context of Islamic Education, the study by Mohd Zin *et al.*, [12] explains there are four types of gamifications in Islamic Studies, including the study by Jamar and Che Noh [8], which presents the advantages of using Kahoot! in Islamic Studies teaching and learning (PdP). This is because through Kahoot! Gamification, there are learning, assessment, testing, measurement, challenges, competition, and entertainment. Meanwhile, the studies by Ab Rahman *et al.*, [1]; Ab Rahman & Asman [2] explain the effectiveness of the Global Tahfiz Game and Global Zakat Game in Islamic Studies and clarify that gamification highly increases collaborative, criticize, communication,

creative and value of students (4C) in PdP and is significantly aligned with 21st-century learning. Similarly, the study by Wan Abdullah *et al.*, [18] developed the gamification “Hajj Pop-Up Tour” to facilitate understanding of the pillars of Hajj, especially for Muslims who have never performed Hajj or Umrah.

2.2 Puzzle It Out Method as a GBL Strategy

The Puzzle It Out method, introduced by Dienes [6] and further developed in modern contexts by Gardner [7], involves solving structured puzzles to actively construct knowledge. This method is based on Piaget’s [15] cognitive theory (1954), where students build concepts through physical or digital manipulation, fostering deeper understanding compared to passive memorization. According to Marianus and Maria [10], puzzle games consist of pieces of images or shapes. They are commonly played by assembling, grouping, integrating, matching, connecting, forming, tapping, perfecting a design, or arranging disassembled parts. Children in early ages often use them as learning aids while also fulfilling their natural play instincts. Various game tools can be used in education. Using these tools in learning is expected to clarify materials delivered by teachers. They also provide motivation by stimulating students to explore and experiment in developing multiple aspects of their growth [3].

2.3 21st Century Islamic Education: Challenges and Innovations

The implementation of PAK 21 involves all learning content and components in schools, including Islamic Education subjects. However, the competency level of Islamic Education teachers regarding PAK 21 is unsatisfactory. The studies by Mazlan and Zulkifli [11] and Mohamad Hanapi *et al.*, [13] both show that Islamic Education teachers have a high level of knowledge about PAK 21, but their skills remain moderate. Teachers who lack skills in PAK 21 are unable to plan PdPc (teaching and learning activities) based on PAK 21, causing less effective implementation of PAK 21 in classrooms. Thus, Islamic Education teachers are less prepared to implement PdPc based on PAK 21 in class. Through interviews in the study by Muhamad Isa *et al.*, [14], it was found that Islamic Education teachers remain unclear when asked about the PAK 21 implementation in classes. Teacher readiness in various aspects such as knowledge, skills, attitudes, and motivation is very important to ensure the objectives of PAK 21 implementation are achieved optimally. A competent teacher is one who is knowledgeable, skilled, has a positive attitude, and is always motivated to implement pedagogy according to the current curriculum despite facing various challenges.

3. Methodology

The methodological framework established for this study is designed to rigorously evaluate the effectiveness of the Puzzle It Out method in fostering inquiry-based learning. Rather than relying on a single data source, the research adopts a mixed-methods approach, capturing both the breadth of statistical trends and the depth of individual teacher experiences. The following sections detail the participants—specifically Islamic Education teachers in the Kuala Nerus district—along with the instrumentation, procedural steps, and analysis techniques used to determine how well this method supports the shift toward 21st Century Learning (PAK21) practices.

3.1 Research Design

To fully understand the impact of Puzzle It Out, a purely quantitative approach was deemed insufficient. Therefore, a mixed-methods design was selected to integrate quantitative measurements with qualitative insights. The rationale for this choice lies in the need to objectively measure variables like student engagement while simultaneously exploring the subjective experiences of teachers transitioning from traditional instruction to active, student-centered environments. This dual approach ensures the evaluation is robust and directly aligned with the aspirations of the Malaysia Education Blueprint (PPPM 2013-2025).

3.2 Population and Research Sample

The study is situated within the Kuala Nerus district of Terengganu, with a specific focus on Islamic Education teachers. The cohort comprises 100 secondary school teachers for whom this subject is a core curriculum component. It is acknowledged, however, that the study has certain boundaries; given the sample size and the specific focus on a single game-based learning method, the findings are reflective of this context. While providing valuable local insights, broader generalization across all teaching contexts would require further extensive study.

3.3 Research Instrument

The research instrument is structured to guide respondents through four logical stages, ensuring a holistic view of the subject matter. Section A begins by establishing the demographic profile of the respondents, covering essential details such as gender, age, school category, and years of service. The inquiry then deepens in Sections B and C, which serve as the quantitative core of the survey. A 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), is employed here to measure specific indicators. Section B assesses the teachers' grasp of the Puzzle It Out method, while Section C measures its perceived effectiveness in driving student engagement and enjoyment. To ensure the nuances of the teachers' daily reality are captured, Section D offers a space for qualitative reflection. This open-ended section invites respondents to discuss practical hurdles, such as logistical constraints, and propose solutions, adding a layer of human experience to the numerical data. To ensure the validity of the responses and accommodate the linguistic background of the participants, the instrument was originally developed and distributed in the national language. Although presented here in English, the original survey was administered in Malay to minimize ambiguity and ensure precise comprehension among the native-speaking respondents. For this paper, the items have been translated into English. This approach ensures that the data collected reflects the teachers' true understanding, unhindered by language barriers.

3.4 Data Collection Procedure

Data collection was executed through a digital questionnaire distributed to the target group in Kuala Nerus. This online approach facilitated the efficient gathering of responses from 100 educators. By consolidating the numerical ratings and open-ended feedback into a single instrument, comprehensive data on the acceptance and effectiveness of the pedagogical innovation was collected without placing an undue burden on the respondents' time.

3.5 Data Analysis Method

Consistent with the mixed-methods design, the analysis was conducted in two distinct phases to ensure a complete interpretation of the results. First, data from Sections A, B, and C underwent descriptive statistical analysis. Percentages were utilized to profile the respondents and gauge the consensus on the method's impact. Notably, preliminary results indicated exceptionally high agreement levels—ranging from 96% to 99%—regarding the method's ability to spark student interest. Second, the qualitative data from Section D was subjected to a thematic review. The opened responses were examined to identify recurring themes regarding implementation challenges and improvement suggestions. This combined analysis ensures that the high statistical agreement is contextualized by the teachers' real-world voices.

4. Results

4.1 Description of Findings Based on Research Objectives

This analysis addresses the three main objectives of the study to evaluate the effectiveness of the Puzzle It Out method among Islamic Education teachers.

4.1.1 Objective 1

To evaluate teachers' perceptions regarding the importance of PAK-21 The findings indicate that teachers in Kuala Nerus possess a very high level of awareness regarding the importance of 21st Century Learning (PAK-21). Most respondents agreed that PAK-21 elements are crucial in today's education. This is evidenced by the high mean score (Mean = 4.66) for items related to the importance of PAK-21. The teachers' readiness to accept changes in education is positive, serving as a solid foundation for introducing new methods like Puzzle It Out.

4.1.2 Objective 2

To analyze the level of teacher agreement regarding the effectiveness of the Puzzle It Out method Based on the data, the level of teacher agreement regarding the effectiveness of this method is classified at a high interpretation level. Specifically, regarding interest and motivation, the item recording the highest agreement indicates that the method makes Teaching and Facilitating (PdP) sessions more interesting while increasing student interaction. From an academic perspective, teachers concurred that the method effectively enhances conceptual understanding, long-term memory, and Higher Order Thinking Skills (HOTS). Consequently, the data demonstrates that this method goes beyond mere entertainment or fun learning to deliver a tangible cognitive impact on students.

4.1.3 Objective 3

To gather teacher suggestions for improvement The data indicates a high level of teacher agreement regarding the method's effectiveness, particularly in its ability to make Teaching and Facilitating (PdP) sessions more engaging and interactive. Beyond increasing motivation, teachers affirmed that the method yields tangible academic benefits by enhancing conceptual understanding, long-term memory, and Higher Order Thinking Skills (HOTS), demonstrating that it delivers real cognitive impact rather than serving merely as entertainment.

4.2 Detailed Analysis by Question Item

This section provides a comprehensive examination of the study's findings, categorized according to established themes. The discussion integrates descriptive statistical analysis specifically mean, median, and mode alongside an in-depth interpretation of teacher responses regarding the Puzzle It Out method. Mean Score Interpretation Guide: i. 1.00 – 2.33: Low ii. 2.34 – 3.66: Moderate iii. 3.67 – 5.00: High

Table 1

Descriptive analysis of perception and existing knowledge

Item/Statement	Mean	Median	Mode	Interpretation
The implementation of PAK21 activities is important in education today	4.66	5.00	5	High
I am knowledgeable about the "Puzzle It Out" method in T&L (PdP)	4.59	5.00	5	High
I have used the "Puzzle It Out" method in teaching	04.09	5.00	5	High

The findings for Theme 1 demonstrate consistently high mean scores, particularly for Item 1 (Mean = 4.66). This clearly indicates that Islamic Education teachers in Kuala Nerus possess a heightened awareness of current educational shifts, but this finding contradicts with study by Muhamad Isa *et al.*, [14], it was found that Islamic Education teachers remain unclear when asked about the PAK 21 implementation in classes. Rather than viewing traditional instruction as the sole pedagogical approach, they recognize that 21st Century Learning (PAK-21) is a fundamental necessity, not merely an optional alternative. Regarding Item 2 (Mean = 4.59), the data suggests that most teachers are familiar with the Puzzle It Out method. This awareness may be attributed to exposure through in-service training courses (LADAP) or the widespread dissemination of educational content via social media. However, a slight decline is observed in the score for Item 3 (Mean = 4.09), which pertains to practical experience in utilizing this method. The disparity between the scores for "knowledge" (4.59) and "application" (4.09) highlights a minor gap between theory and practice. While teachers acknowledge the efficacy of the method, a small segment may not yet implement it regularly, likely due to time constraints associated with preparing the necessary teaching aids. This statement is proven by the studies by Mazlan and Zulkifli [11] and Mohamad Hanapi *et al.*, [13] both show that Islamic Education teachers have a high level of knowledge about PAK 21, but their skills remain moderate.

Table 2

Descriptive analysis of effectiveness on students

Item / Statement	Mean	Median	Mode	Interpretation
Makes PdPc sessions more interesting and enjoyable	4.81	5.00	5	High
Increases interaction and cooperation among students	4.81	5.00	5	High
High Students become more motivated to learn	4.78	5.00	5	High
High Improves student understanding of the subject	4.69	5.00	5	High
Enhances Higher Order Thinking Skills (HOTS)	4.75	5.00	5	High

This theme recorded the highest mean scores across the entire study, demonstrating that the effectiveness of the "Puzzle It Out" method is highly significant across emotional, social, and cognitive domains. Critically, the "interesting and enjoyable" element achieved a mean score of 4.81, successfully breaking the monotony of traditional lecture-based Islamic Education by lowering

students' affective filters and increasing motivation (Mean = 4.78) through play-based problem solving. Concurrently, interaction and cooperation also recorded the highest mean score (4.81), aligning with PAK-21 standards for Communication and Collaboration by fostering discussions that encouraged even typically passive students to actively contribute. Beyond engagement, the method proved academically robust, with high scores for improved understanding (Mean = 4.69) and Higher Order Thinking Skills (HOTS) (Mean = 4.75), refuting the notion that games are a waste of time by stimulating information processing and decision-making more effectively than mere written drills. This study shows that "Puzzle It Out" also contributes to developing HOTS among the students and it is proven by a study that shown these gamifications also provide motivation by stimulating students to explore and experiment in developing multiple aspects of their growth [3].

Table 3
Descriptive analysis of implementation challenges

Item/Statement	Mean	Median	Mode	Interpretation
Descriptive Analysis of Implementation Challenges	3.38	4.00	5	Moderate
Moderate Classroom space constraints are a challenge	3.22	4.00	5	Moderate

In contrast to the effectiveness theme, the challenges' theme yielded moderate mean scores of 3.38 and 3.22, though a Mode value of 5 indicates that a significant portion of teachers strongly perceive these obstacles as critical issues despite the moderate average. The primary constraint identified was the time factor, where the demands of a packed syllabus conflict with the extended duration required for the various phases of the "Puzzle It Out" activity, suggesting that teachers must manage time wisely or reserve the method for specific, difficult topics. Furthermore, physical classroom constraints (Mean = 3.22) regarding student density were found to hinder movement during group activities, with findings indicating that classes exceeding 30–40 students can become chaotic without strategies such as limiting class size or implementing co-teaching for better control. The researchers found that respondents indicated there are challenges in implementing PAK21 due to these factors.

4. Conclusions

The study findings showed that 62.5% of respondents were trainee teachers (aged 20-30 years) who welcomed the innovation and implementation of PAK21 "Puzzle It Out". In terms of effectiveness, more than 90% of respondents agreed that this Game-Based Learning (GBL) approach makes the learning environment more enjoyable compared to traditional methods. The findings also showed a high percentage of agreement in improving students' higher-order thinking skills (HOTS). However, some respondents admitted to facing implementation challenges, but this did not affect the overall positive impact of the method on student performance. Acknowledgement The researchers like to thank everyone who supported this study. Special thanks to staffs of Fakultas Pengajaran Kontemporari Islam and Pusat Pemindahan Ilmu dan Pendidikan Berterusan for their time and feedback. Finally, we appreciate our family and friends for their constant support, which made this research possible. We would like to thank everyone who supported this study. Thank you to the Islamic Education teachers for their time and feedback.

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