



The 3Q Fun Learning Module: Transforming Research into an Innovative Educational Product

Tham Jia Hao^{1*}, Siti Salina Mustakim², Enio Kang Mohd Sufian Kang²,
Asnul Dahar Bin Minghat³, Abdul Hamid Bin Abdul Rahim⁴

¹ Open University Malaysia, Menara OUM, Blok C, Kompleks Kelana Centre Point, Jalan SS7/19, Kelana Jaya, 47301 Petaling Jaya, Selangor, Malaysia

² Universiti Putra Malaysia, Jalan Universiti 1, 43400 Serdang, Selangor, Malaysia

³ Universiti Teknologi Malaysia, Jalan Sultan Yahya Petra, 54100 Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur, Malaysia

⁴ Institut Pendidikan Guru Kampus Tawau, KM 36, No. 27, Jalan Balung, 91009 Tawau, Sabah, Malaysia
tham_jiahao@oum.edu.my

Abstract. Educational inequity and low learner engagement continue to pose significant challenges in developing basic literacy and numeracy skills, especially among marginalised communities. This study introduces the 3Q Fun Learning Module as a research-informed educational product designed to translate empirical findings into classroom practice—organised around three interconnected dimensions: Creative Quotient, Play Quotient, and Social Quotient — with a view to facilitating an engaging and inclusive learning environment. The module was created based on the ADDIE instructional design model, which comprises needs analysis, design development, implementation, and evaluation. Focus group discussions and observations were used to identify learner needs, while a Delphi study validated the module content and design. The module was implemented and assessed through classroom observations, interviews, and learner feedback. Moreover, the findings suggest that the 3Q Fun Learning Module can be responsive and adaptable to various educational needs and cultural aspects. The study shows how a research-based instructional design can be turned into a scalable educational product that increases learner engagement and promotes inclusive learning.

Keywords: Educational Innovation, Fun Learning, Instructional Design, Inclusive Education, Module Development.

1 Introduction

Educational inequality remains a major issue in marginalised communities as they are deprived of access to quality education. For example, many learners in these contexts have limited prior exposure to education due to poverty, geographical isolation, limited resources for learning, and/or low motivation for more formal school-based study [1]. Such conditions frequently contribute to lower literacy and numeracy outcomes and higher dropout rates [2]. In many developing areas, basic subjects such

as reading, writing and arithmetic have not reached levels expected at the national level, emphasising the urgent need for effective educational responses [3].

One of the most important factors in bringing better educational outcomes is learner engagement. Traditional teacher-centred instructional approaches often do not account for the contextual realities and interests of learners from disadvantaged settings. Motivation to participate in schooling declines dramatically when learning materials are perceived as disconnected or irrelevant to learners' everyday lives [4]. Therefore, developing children's basic skills requires interactive and culturally relevant learning strategies. Previous research on Bajau pupils in Semporna also showed that learners expressed interest in an entertaining alternative curriculum, suggesting the need for fun and contextualised learning approaches to reduce disengagement and dropout [5].

In light of these challenges, research has begun to investigate alternative instructional models that incorporate playful learning, creativity, and collaborative interaction into classroom practice. Playful learning strategies tend to enhance learners' intrinsic motivation, foster active engagement, and promote deeper cognitive engagement [6]. Nevertheless, while there are plenty of studies showing how effective fun learning activities can be, far fewer translate research findings into structured, scalable educational products that teachers can use systematically [7,8].

To fill this gap, the current study develops a research evidence-based, innovative educational product, the 3Q Fun Learning Module, using the process of instructional design. The module integrates three core dimensions of learner development: CQ (Creative Quotient), PQ (Play Quotient), and SQ (Social Quotient). These three qualities are collectively known as the 3Q framework, which seeks to improve creativity, play and collaborative learning between learners.

The 3Q Module is developed using the ADDIE instructional design analysis model, a core methodology for structuring and delivering educational products [9]. The module was constructed to serve the contextual needs of learners while also ensuring instructional effectiveness and practical usability, using a model composed of a series of phases: analysis, design, development, implementation, and evaluation. The steps taken in this research include needs analysis through focus group discussions, validation by an expert panel using the Delphi technique, implementation in the classroom, and evaluation through observation and interviews.

This paper illustrates how empirical research can be translated into an innovative educational product that supports inclusive learning practices. In essence, the paper describes and explains the design and development procedure of the 3Q Fun Learning Module and its prospects for scalability across a variety of educational settings. This study thus fills the gap not only between theory and practice but also adds to research in the domain of educational innovation and instructional product design.

This study contributes to educational innovation in three ways. First, it transforms empirical research findings into a structured educational product through the 3Q Fun Learning Module. Second, it integrates Creative Quotient, Play Quotient, and Social Quotient into a single instructional framework, unlike conventional fun learning or game-based approaches that often focus mainly on enjoyment or isolated activities. Third, it demonstrates how the ADDIE model can be used to develop,

validate, implement, and evaluate an adaptable module for supporting foundational literacy and numeracy among marginalised learners.

2 Literature Review

2.1 Educational Challenges in Marginalised Communities

Learners in rural and marginalised communities around the world are still falling further behind as educational inequalities persist [10, 11]. Access to quality education is hindered by socioeconomic inequality, geographical isolation and limited educational infrastructure [12]. Such barriers can often lead to lower school participation and poorer learning outcomes than those of learners in better-developed regions [13].

Developing foundational learning skills is one of the most important challenges in these contexts. Literacy and numeracy skills are critical not only to academic performance but also to lifelong learning; unfortunately, many children in low-income neighbourhoods do not master these foundational skills [14]. Disengagement from formal schooling is often associated with learning environments that do not resonate with learners' cultural experiences and day-to-day realities, according to research [15, 16]. When learners consider what they are learning in school as not relevant to their lives, motivation to attend school and learn decreases [17].

These challenges provide a basis for aligning learning experiences with learners' interests and environments, prompting educational providers and policymakers to consider developing contextualised education. These approaches foster engagement and enable learners to recognise the relevance of education in their individual and community contexts.

2.2 Fun Learning and Learner Engagement

Through this, fun learning has arisen as a pedagogical method that helps learners stay engaged and motivated. Fun learning environments create rich experiences through interactivity and collaborative challenge [18]. All of those approaches shift the emphasis away from the passive transmission of information to the active construction of knowledge.

Research has shown that playful learning environments have a dramatic impact on learners' participation, attention, and excitement about learning [19]. Game-based and creative activities inspire exploration and problem-solving [20]. It also fosters higher-order thinking skills such as creativity, critical thinking, and collaboration [21].

Building positive emotional connections to learning also takes shape through fun, playful approaches. Learning that is enjoyable and inspires curiosity can foster intrinsic motivation [22]. It is an important driver of persistence in academic engagement and outcomes over time [23].

2.3 Instructional Design and Educational Product Development

Instructional design models are systematic approaches to developing instructional materials. There are several models for learning product development; however, one of the most widely used frameworks is still ADDIE [24]. The ADDIE model refers to the five stages of Analysis, Design, Development, Implementation and Evaluation.

The analysis phase identifies learners' needs, learning contexts, and instructional goals. The design phase focuses on creating instructional strategies, learning objectives and assessment methods. The development phase is for generating components of a learning program. Implementation is how the instructional product would be employed in actual learning contexts, and evaluation determines whether the product is effective and what improvements can be made [25].

The ADDIE model is the bridge from theory to instructors and instructional materials. Furthermore, these models incorporate iterative evaluation processes to ensure that any product developed is valid both pedagogically and in the context in which it is deployed [26].

2.4 The 3Q Framework: Creative, Play, and Social Quotients

Integrating three complementary dimensions of learner development—Creative Quotient, Play Quotient, and Social Quotient—the 3Q framework holistically blends academic rigour with engagement. The dimensions mentioned are different facets of engagement and cognitive development for learners.

The Creative Quotient (CQ) focuses on fostering creative and imaginative learners through drawing, storytelling, and problem-solving exercises, prompting learners to share ideas and discover alternative solutions to learning challenges [27].

The Play Quotient (PQ) focuses on play as a learning tool [28]. Play-based facilitation of educational activities, such as fun games and challenges, helps learners experience learning in a fun and exploratory way [29]. Play sparks curiosity and promotes experimentation, both of which can deepen conceptual thinking [30].

The Social Quotient (SQ) emphasises collaborative and social learning. Learners' communication skills and the development of a respectful learning community are achieved through group activities, peer-to-peer discussions, and cooperative learning tasks [31].

These elements, combined, make up the premise of the 3Q Fun Learning Module, which developed a balanced learning environment focused on creativity, engagement, and collaboration.

3 Methodology

This study adopted a design and development research approach guided by the ADDIE instructional design model. The participants were selected according to the requirements of each research phase. During the analysis phase, 25 elementary Bajau learners were involved in focus group discussions to identify their learning needs, school experiences, interests, and preferred learning activities. The learners were

selected from a primary school in Semporna, Sabah, based on their relevance to the study context and their involvement in the target learning group.

During the design and development phase, five expert panels were invited to evaluate the module using the Delphi technique. The experts reviewed the module in terms of objectives, content, learning activities, assessment activities, sequence, graphic presentation, and consistency. Their feedback was used to revise and strengthen the module before classroom implementation.

During the implementation and evaluation phases, the module was implemented with 25 Bajau learners and one Design and Technology teacher. Data were collected through classroom observations, focus group discussions, and teacher interviews. The qualitative data were analysed thematically by identifying recurring patterns related to learner motivation, engagement, participation, and perceived improvement in reading, writing, and arithmetic. The Delphi data were analysed based on expert consensus, while observation and interview data were used to evaluate the usability and effectiveness of the module in an authentic classroom setting.

Thematic analysis was conducted by reading the focus group, observation, and interview data repeatedly to identify recurring ideas. These ideas were then coded and grouped into broader themes related to learner engagement, motivation, participation, and perceived improvement in reading, writing, and arithmetic. The themes were compared across data sources to strengthen the consistency of the findings.

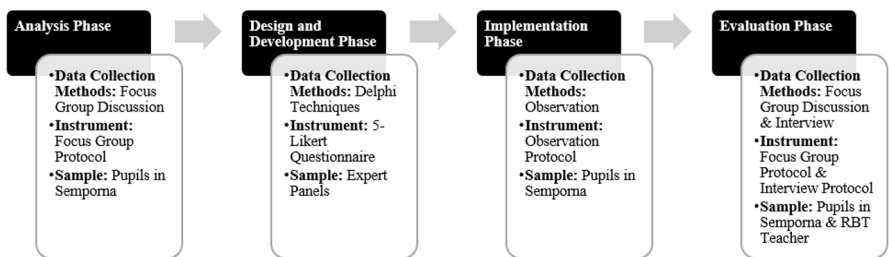


Fig. 1. Research design of the 3Q Fun Learning Module development process.

The research design in the development of the 3Q Fun Learning Module is presented in Figure 1. According to the phases of the ADDIE framework in this study, there are analysis, design, development, implementation, and evaluation, with related research techniques or instruments used and the study participants.

3.1 Needs Analysis

The first step of the needs analysis phase was to assess learners' educational challenges, interests, and learning preferences. Data were gathered through focus group discussions and classroom observations of primary school learners. These methods offered insights into learners' experiences, motivation, and preferred learning activities. The analysis indicated increased interest among learners in hands-on activities and other interactive learning experiences compared with

traditional classroom instruction. Some of the learning strategies that were specifically identified in both studies as engaging for learners were outdoor activities, games and collaborative work. Based on these findings, the 3Q Module was designed.

3.2 Module Design and Development

The 3Q Fun Learning Module was developed based on the findings of the needs analysis, which indicated that creative, playful, and social learning should be integrated. The 3Q framework's 3 core dimensions were used for organising the learning activities. In addition, the module features interactive games, creative writing and drawing activities, multimedia learning materials and collaborative group projects and problem-solving exercises. A Delphi study of expert panels was conducted to establish the validity and quality of the module design. Experts evaluated the module's objectives, content, activities, and assessment strategies. Feedback from these scholars was instrumental in refining and aligning the module pedagogically.

3.3 Implementation and Evaluation

The 3Q Module was applied in an actual classroom after the development phase. The implementation allowed researchers to study how learners would engage with the module and to what extent it would foster both engagement in and foundational learning skills. Data were collected during the evaluation of the program through class observations, teacher interviews, and focus group discussions with learners. These approaches yielded qualitative data on the module's usability, effectiveness, and adaptability in real educational settings.

3.4 The 3Q Fun Learning Module as an Educational Product

The 3Q Fun Learning Module is the outcome of converting research findings into a ready-to-use, structured educational mechanism. Unlike traditional teaching material, the module is an adaptable learning system that can be applied in a variety of cultural and educational settings.

Using creative exercises, play-based activities, and collaborative learning experiences, the module provides hands-on experience. The 3Q framework strives to ensure that the learning environment promotes not only cognitive development but also social interaction through these components.

The 3Q Module is designed to be flexible and scalable. The module can be adjusted for different classroom environments, learner age groups, and cultural contexts. Such flexibility enables teachers and trainers to deliver the module in a variety of teaching contexts while respecting its foundational instructional tenets.

By demonstrating how an instructional design framework can lead to a research-based yet practically applicable educational tool, the 3Q Fun Learning Module shows how research can be transferred into practice to address educational inequities.

4 Results and Findings

The implementation of the 3Q Fun Learning Module positively affected learners' engagement and participation. Learner observations and feedback demonstrated a notable increase in motivation towards reading, writing, and arithmetic through incorporating creative activities, play-based learning, and communication, such as group work, into lessons. Results are categorised into four areas: learners' needs analysis, expert validation, classroom examples of implementation and the module's effect on learner engagement.

4.1 Needs Analysis: Learners' Engagement and Learning Preferences

The needs analysis phase focused on identifying learners' prior educational experiences, motivation to learn, and preferred learning activities. Focus group discussions and classroom observations were used to collect data. The results revealed several recurring themes related to learners' engagement with formal education.

First, a large portion of learners reported low engagement in traditional classroom settings. Traditional teaching methods were seen as dull and irrelevant to them. Consequently, learners demonstrated little enthusiasm for reading, writing, and arithmetic taught through lecture-style instruction.

Second, the analysis suggested that learners showed a clear preference for experiential learning and hands-on activities. Learners felt excited about activities that involved drawing, storytelling, and games, as well as outdoor tasks like planting and working together. These activities encouraged learners to engage and participate actively in learning.

Third, the results underscore the role of social interaction in learning. A collaborative learning approach encouraged teamwork, peer idea sharing, and opportunities to work on tasks together. Social learning experiences seemed to increase learners' confidence and desire to participate in classroom discussions.

Based on these findings, the 3Q Fun Learning Module was designed to comprise a series of creative activities, play-based learning and collaborative tasks to create an engaging and contextualised learning environment.

4.2 Expert Validation through the Delphi Study

A Delphi study was then undertaken by a panel of experts in education and curriculum design to evaluate the validity and quality of the 3Q Fun Learning Module. The experts met in groups to evaluate the module through several lenses, including learning objectives, the relevance of the content, learning activities, assessment strategies, and overall consistency.

The Delphi process involved two rounds of evaluation. In the first phase, experts reviewed the module's preliminary design and offered ideas on clear objectives aligned with learning activities that support the overall instructional scenario for primary learners. In response to this feedback, modifications were made to enhance the organisation and instructional flow of the module.

The expert panel re-evaluated the modified module in Round 2. The findings showed strong agreement among experts on what was relevant and fit for purpose in the module's content and design. The experts all agreed that the learning activities were engaging, appropriate for their age group, and designed to help develop foundational literacy and numeracy skills.

Results of the Delphi validation affirmed the high content validity and instructional coherence of the 3Q Fun Learning Module, indicating its potential for implementation in class.

4.3 Classroom Implementation of the 3Q Fun Learning Module

After the validation phase, the 3Q Module was applied in an actual classroom to observe how learners engaged with the learning activities. While implementing this module, learners were involved in numerous learning activities integrated into it. Tasks such as drawing, storytelling, and writing exercises promoted creativity, allowing learners to present ideas and build their language skills. Using play-based activities, such as educational games and quizzes, created an engaging learning environment that kept learners' attention for longer periods.

Besides this, group exercises fostered interaction and co-operation among peers. During problem-solving tasks among learners, they were seen sharing ideas and presenting solutions. Such interactions provided a shared learning environment that fostered participation.

Teachers also indicated that the module provided a structured yet flexible teaching resource, enabling them to more effectively facilitate learning and customise activities to meet learners' needs.

4.4 Impact on Learner Motivation and Engagement

Data from observations and learner feedback suggest that the 3Q Module improved learners' motivation to engage with foundational learning activities. It was found that learners were more engaged when reading, writing and arithmetic tasks were embedded in creative and playful activities.

The implementation phase revealed several significant engagement behaviours:

- Increased participation in classroom discussions
- Greater willingness to attempt reading and writing tasks
- Sustained attention during learning activities
- Higher levels of collaboration among peers

Integrating creative, playful, and social learning modalities seemed to reduce apprehension about schoolwork. Rather than viewing literacy and numeracy challenges as hard or stressful, children engaged with them with curiosity and engagement.

In summary, the findings suggest that the 3Q Fun Learning Module provided a promising learning environment in which engagement leads to greater acquisition of foundational competence.

5 Discussion

The findings show that the 3Q Fun Learning Module enhances learner engagement and foundational learning. The discussion below interprets these findings in relation to existing literature on fun learning, instructional design, and learner engagement.

5.1 Enhancing Learner Engagement through Fun Learning Approaches

Creative and active learning practices have proven effective in promoting learners' engagement and motivation to participate in classroom activities. These findings align with earlier research emphasising the importance of enjoyable and playful contexts for learning in fostering intrinsic motivation and active participation [32].

These play-based learning strategies enable learners to experiment with and interact with ideas rather than memorise content. Fun learning experiences also enhance concentration and positive feelings towards learning [33]. It is this pedagogical approach that is reflected in the games, creative tasks, and collaborative activities within the 3Q Module.

In addition, the module illustrates how playful learning can be intentionally integrated into formal instructional design. Instead of viewing fun activities as supplementary or peripheral elements, the 3Q framework makes creativity, play, and socialisation core aspects of learning. The inclusion of multimedia materials is also consistent with studies showing that short-form digital content can influence learners' motivation, creativity, knowledge acquisition, and social interaction [34, 35].

5.2 The Role of Creative, Play, and Social Quotients in Learning.

The 3Q framework focuses on three complementary dimensions of learner development: Creative Quotient (CQ), Play Quotient (PQ), and Social Quotient (SQ). The results indicate these three dimensions interconnect to engender a balanced learning environment.

Creative learning activities inspire the learner to brainstorm, produce and think creatively. These processes facilitate deeper cognitive engagement, helping learners connect new knowledge with prior experience.

The module supports emotional engagement and curiosity through play. Educational games may offer pathways for learners to practise skills in low-pressure contexts, thereby relieving the pressure of academic tasks and reducing anxiety.

Engagement is heightened further through social learning experiences, which provide opportunities for collaboration and peer support. Through group activities, learners share experiences and develop communication skills. Social interaction also bolsters the learners' sense of belonging in the classroom community.

All three fit well with modern education theory, which values active engagement and collaboration among learners.

5.3 Transforming Research into Educational Innovation

The main contribution of this study is to show how empirical research can become a real-life educational product. A lot of educational research analyses theoretical models or focuses on short-term interventions, without developing structured tools that educators can use in practice.

This study developed a learning module based on both the ADDIE instructional design framework and research findings. Needs analysis ensured the module was relevant to learners' contextual realities, and Delphi validation lent credibility to the design.

This module's usability was also echoed in classroom implementation. It was found that teachers were able to incorporate the module into their teaching practices, and learners responded well to the activities.

This process demonstrates how research-based instructional design can support educational innovation — where theoretical frameworks are intertwined with iterative development and embedded testing within formal learning environments.

5.4 Critical Interpretation of the Module's Effectiveness

The findings suggest that the 3Q Fun Learning Module supported learner engagement by combining cognitive, emotional, and social dimensions of learning. From an instructional design perspective, the use of the ADDIE model ensured that the module was not developed arbitrarily, but was grounded in learner needs, expert validation, classroom implementation, and evaluation. This supports the argument that educational innovation is more effective when it is systematically designed and contextually informed.

The findings also align with learning-by-doing perspectives, as learners responded positively to hands-on activities such as drawing, games, quizzes, storytelling, and outdoor learning. These activities allowed learners to experience reading, writing, and arithmetic as meaningful practices rather than abstract school tasks. In addition, the Social Quotient component reflects sociocultural learning principles, as peer interaction and collaborative activities helped learners participate more actively in learning.

However, the positive response to the module should be interpreted carefully. Increased motivation may not have resulted solely from the 3Q framework. It may also have been influenced by the novelty of the activities, the teacher's facilitation style, the small-group learning environment, and the learners' interest in activities connected to their daily experiences. Therefore, while the findings indicate that the module has strong potential, future studies should include larger samples, comparison groups, and quantitative measures of learning outcomes to determine its effectiveness more robustly.

5.5 Adaptability of the 3Q Module across Educational Contexts

Another important finding is the adaptability of the 3Q Fun Learning Module across educational contexts. Based on the design fundamentals, which cater to an individual context, the application can be modified for different learning environments.

For example, the three construction pillars of the 3Q framework—with creativity at its core—expressed through play and social interaction, are universal; they transcend any particular context or curriculum. More generally, they embrace foundational learning strategies that may enhance retention in disparate classroom environments.

Educators can adjust the activities linked to each module to reflect the languages, cultures, and learning contexts of different communities while retaining the essence of the instructional structure. Such variety increases the 3Q Module's potential scalability as an educational product.

Overall, the adaptability of the 3Q Fun Learning Module lies in its flexible instructional structure. While the learning activities can be modified according to learners' age, language, culture, and classroom context, the core principles of creativity, play, and social interaction remain central to its design.

This study contributes to educational innovation by demonstrating how a research-based instructional design process can be transformed into a practical educational product. The 3Q Fun Learning Module differs from conventional activity-based or game-based approaches because it integrates creativity, play, and social interaction into a coherent framework. Its development was guided by learner needs, expert validation, classroom implementation, and evaluation. Therefore, the module offers both theoretical and practical value: theoretically, it extends discussions on learner engagement through the 3Q framework; practically, it provides educators with a structured, adaptable tool for supporting foundational learning among marginalised learners.

6 Conclusion

The 3Q Fun Learning Module represents a research-informed educational product developed through a systematic instructional design process. Guided by the ADDIE model, the module integrates Creative Quotient, Play Quotient, and Social Quotient to create learning experiences that are creative, playful, collaborative, and contextually meaningful. The findings suggest that the module has potential to enhance learner motivation, classroom participation, and engagement with foundational reading, writing, and arithmetic activities.

The study contributes to educational innovation by showing how empirical research can be translated into a structured and adaptable learning product. However, the findings should be interpreted within the limitations of the study, including the small sample size, single educational setting, and reliance on qualitative data. Future research should involve larger and more diverse groups of learners, include quantitative measures of literacy and numeracy development, and examine the long-term effectiveness and scalability of the 3Q Fun Learning Module across different educational contexts.

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