

Stem-Booster Via Game-Based Learning Module For Non-Academic Tahfiz Students

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Abstract

The absence of academic subjects throughout the three-year of tahfiz memorization may cause the students to lose interest in STEM subjects. As a result, a non-digital game-based module is developed to support their teaching and learning. The main objective of this innovation is to increase students' interest in STEM subjects, particularly Mathematics, and to equip them with the fundamental foundation prior to returning to upper secondary school. This module includes four selected non-digital real-world relatable games: arithmetic fractions of a cafe and restaurants, geometry puzzle block and draw, speed and velocity games of Tic-tac-toe, and strategic-coordinate military-game. These games are chosen based on the lower secondary school mathematics curriculum and are introduced to students based on their level of comprehension. This module is applied to Maahad Riyadhil Quran (MRIQ) students during a prescribed program. The uniqueness of this module is that it incorporates cognitive and psychomotor skills for each of the non-digital games, making it an interesting teaching and learning aid to overcome interest-gaps in STEM courses for non-academic tahfiz students. This module has positively affected students' interest to comprehend the value of mathematics, as seen by the results. This method, in the students' opinions, increased their interest in mathematics and widened their perspectives on the topics. Non-digital games have societal potential benefits, such as improving students' engagement by making learning more dynamic, interactive, enjoyable and at the same time, more challenging. Students are incentivized to participate and strive for excellence, which enhances interest not only in mathematics, but also in retention, motivation, personalized learning and social interaction. The innovative module has a commercial potential, where workshops or events can be hosted to create enthusiasm and interest among students and parents, while also engaging them in the design process by soliciting their thoughts and opinions to increase excitement and ownership.

Keywords: STEM, non-digital game, game-based learning, mathematics

STEM-BOOSTER VIA GAME-BASED LEARNING MODULE FOR NON-ACADEMIC TAHFIZ STUDENTS

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01

INTRODUCTION

Tahfiz education is one of the popular streams of education in Malaysia and well accepted by Muslim community. There are non-academic tahfiz institution that does not offer any formal certification or secular academics.



02

PROBLEM STATEMENTS

- Graduated students are expected to continue their academic studies and seat for Sijil Pelajaran Malaysia (SPM).
- Without any lower secondary secular-STEM academics, will the graduates manage to adapt and to grasp the subjects thought in the higher secondary?

03

OBJECTIVES

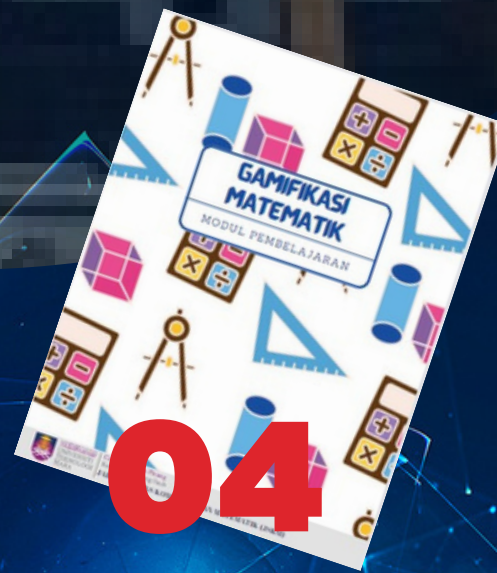
The main objective of this innovation is to increase students' interest in STEM subjects, particularly Mathematics, and to equip them with the fundamental foundation prior to returning to upper secondary school.



05

APPLICATION TO SOCIETY

This module has been applied to Maahad Riyadhil Quran (MRIQ) students during a prescribed program.



04

INNOVATED PRODUCT

A non-digital game-based module is developed to support their teaching and learning. This module includes four selected non-digital real-world relatable games.
 e-ISBN: 978-967-0049-05-2



07

COMMERCIALIZATION POTENTIAL

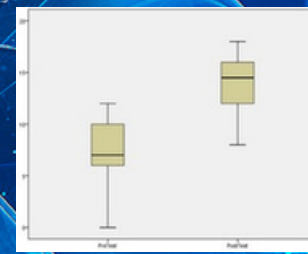
The innovative module has a commercial potential, where workshops or events can be hosted to create enthusiasm and interest among students and parents, while also engaging them in the design process by soliciting their thoughts and opinions to increase excitement and ownership.

06

EVALUATION

We also conducted a pre and post test to the students. From the results, we can say that:

- There was a significant average difference between pre- and post-scores ($t=5.617, p<0.001$)
- On average, post-test scores were 6.93 points higher than pre-test scores (95% CI [4.26,9.59])



Paired Samples Statistics				
	Mean	N	Std. Deviation	Std. Error Mean
PostTest	13.9286	14	2.94734	.78771
PreTest	7.0000	14	3.61620	.96647

08

NOVELTY

- Cognitive and psychomotor skills for each of the non-digital games, making it an interesting teaching and learning aid to overcome interest gaps in STEM courses for non-academic tahfiz students.
- This module has positively affected students' interest to comprehend the value of mathematics, as seen by the results.

Meet our Team:



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Surat kami : 700-KPK (PRP.UP.1/20/1)

Tarikh : 20 Januari 2023

Prof. Madya Dr. Nur Hisham Ibrahim
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Tuan,

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Perkara di atas adalah dirujuk.

2. Adalah dimaklumkan bahawa pihak kami ingin memohon kelulusan tuan untuk mengimbas (*digitize*) dan memuat naik semua jenis penerbitan di bawah UiTM Cawangan Perak melalui Repositori Institusi UiTM, PTAR.

3. Tujuan permohonan ini adalah bagi membolehkan akses yang lebih meluas oleh pengguna perpustakaan terhadap semua maklumat yang terkandung di dalam penerbitan melalui laman Web PTAR UiTM Cawangan Perak.

Kelulusan daripada pihak tuan dalam perkara ini amat dihargai.

Sekian, terima kasih.

“BERKHIDMAT UNTUK NEGARA”

Saya yang menjalankan amanah,

Setuju.

27.1.2023

SITI BASRIYAH SHAIK BAHARUDIN
Timbalan Ketua Pustakawan

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