

CONFERENCE PROCEEDING

The Effectiveness of Al-Khawarizmi Module Based on Numbers Among Gifted and Talented Muslim Students

Norazlina Subani^{1*}, Akif Zafran Normanhisham¹, Farith Akhtar Rahmat¹, Akil Naeem Muslim¹

¹Kolej PERMATA Insan, Universiti Sains Islam Malaysia, 71800, Nilai, Negeri Sembilan, Malaysia

*Corresponding author: norazlina.subani@usim.edu.my

ABSTRACT

Science and Mathematics are very enjoyable subjects if students can learn, understand and apply them daily. However, many students are less interested in this Mathematics subject than others such as language, history and physical and health education. This is because Mathematics requires students to think logically through proofs and various basic concepts, which most students find difficult to understand. A few gifted and talented Muslim students have a poor level of achievement in Mathematics. They think that Mathematics is boring and not important in daily life. A special module named the Al-Khawarizmi Number Base Module is used as an intervention step for students who need guidance and support to achieve excellence in Mathematics. The main objective in this research is to verify the effectiveness of the Al-Khawarizmi Basic Number Module on the achievement and understanding of Mathematics among gifted and talented Muslim students at PERMATA Insan College, Universiti Sains Islam Malaysia. This module is divided into three categories: 28% of students are required to follow the entire module as an intervention process, 30% of students can follow some parts of the module, and 42% of students are capable of being facilitators during intervention workshops. Achievement of students' understanding in Mathematics can produce Muslim scholars who are future-ready and excel in the field of Mathematical Sciences in line with the intentions of the PERMATA Insan College Strategic Plan and Malaysian Education Development Plan 2013-2025.

Keywords: Al-Khawarizmi Module; Mathematics field; Basic Number; INAQ Gifted Education

INTRODUCTION

Science and mathematics play an important role in life applications and innovation, because they can be fun and applied in everyday life. However, many students find mathematics challenging because of its logical nature and the need for logical thinking. According to Safura and Norziah (2014), many students view mathematics as boring and dreadful, therefore thinking it useless. This leads to low exam results among students. Factors contributing to this lack of interest include not learning mathematics early in life, not applying mathematics in daily life, thinking less, and not practicing during free time. Factors contributing to this lack of interest include lack of early exposure, lack of application in daily life, excessive copying, not practicing timed answers, and lack of scratch paper. To understand mathematics, students should think, exercise, and solve problems by writing answers, using sketchbooks, and practicing timed answers. By focusing on these aspects, students can improve their success in mathematics. According to Yusminah (2012), students who have problems in mathematics are students who do not get a number education or count well before they go to school.

METHODOLOGY

Respondents

Gifted and talented Muslim students at Kolej PERMATA Insan aged between 13 to 17 years old with poor achievement in Mathematics subjects are identified. Pupils will be given focused interventions by following a series of workshops. This Mathematics strengthening workshop is held to strengthen and solidify the knowledge of Mathematics to gifted and talented Muslim students who are less brilliant but have the potential to excel in the field of Mathematics.

Al-Khawarizmi Basic Number Module

The Al-Khawarizmi Basic Number Module is designed for students with weak Mathematical skills who have the potential to excel in Mathematics. The module contains three basic topics which are:

- i) Ratio Number;
- ii) Factors and Multiples;
- iii) Standard Form.

Students should join and attend the mathematics workshop that is organized by the college. In this workshop, the module of Al-Khawarizmi Basic Number was implemented to student students involved. The contents of the module involve exercises and various questions that related to the given topics and students should be discussed with their group members. A facilitator is appointed for each group to assist the group. Then, students should complete their tasks in this module with a game called "Find and Match: Al-Khawarizmi Robot of Number (Riz and Ron)". This game was created to enhance students' capability to understand their Mathematics performance and to know the speed level of students in answering the questions given. Finally, students are evaluated individually through a post-test and a survey questionnaire for feedback on the workshop's implementation.

RESULTS AND DISCUSSION

PERMATA Insan College is identifying intelligent Muslim students who struggle with math subjects and providing focused intervention through workshops. Students will be divided into groups of various ages and levels, with mathematics subject teachers as guidance teachers and facilitators assigned to each group. The Al-Khawarizmi Basic Number Module will be used for focused intervention, covering Ratio Numbers, Factors and Multiples, and Standard Form. Students will also be tested using a card game called "Find and Match: Al-Khawarizmi Robot of Number (Riz and Ron)," which tests their understanding and speed of thinking. This module is divided into three categories: 28% of students are required to follow the entire module as an intervention process, 30% of students can follow some parts of the module, and 42% of students are capable of being facilitators during intervention workshops.

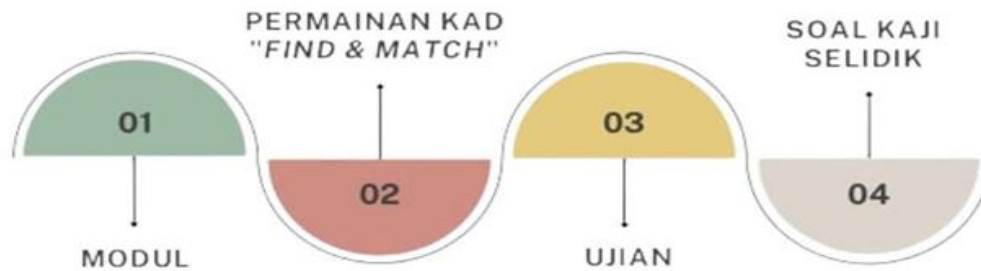


Figure 1. shows the flow of the module

CONCLUSION

The Al-Khawarizmi module, a special training program for intelligent Muslim students, aims to produce Islamic scholars in Science and Mathematics. The module, specifically the Al-Khawarizmi Basic Number, aims to strengthen and solidify knowledge of mathematics among less brilliant students, aiming to produce Muslim scholars who excel in Mathematical Sciences (Subani et al., 2021). This study aims to analyze the effectiveness of the Al-Khawarizmi module in improving understanding and professional knowledge among intelligent Muslim students. The PERMATA Insan College Strategic Plan and Malaysian Education Development Plan 2013-2025 aim to produce future-ready Muslim scholars in Mathematics through effective student understanding.

ACKNOWLEDGEMENT

Kolej PERMATA Insan and Universiti Sains Islam Malaysia are gratefully acknowledged.

REFERENCES

- Yusminah Mohd. Yusof. (2012). Teaching and Integration of Content Pedagogical Knowledge Components (PCK) of Teachers in Algebra. Doctoral Thesis, Faculty of Education, Universiti Kebangsaan Malaysia.
- Ministry of Education Malaysia (2013). Malaysia Education Blueprint 2013-2025. Preschool to Post-Secondary Education. Obtained from <https://www.moe.gov.my/menumedia/media-cetak/penerbitan/dasar/1207-malaysia-education-blueprint-2013-2025/file..>
- Mardiah Hafizah, M.H., Nurzatulshima, K. 2020. "Creativity in Mathematics: Malaysian Perspective". *Universal Journal of Educational Research*, Vol 8(3C) p. 77-84.
- Subani, N., Mohd Nasrul, M.A.S., Mohamad Shukri, M.Z. 2021 "Enhance the Understanding of Gifted and Talented Muslims Student's on Quadratic Functions Using GeoGebra". *Insan Junior Researchers International Conference 2021*, Vol 2 p. 88-94.
- Subani, N., Mohd Nasrul, M.A.S., Mohamad Shukri, M.Z. 2021 "Exploring Gifted and Talented Muslims Student's Performance Using Geogebra in Teaching and Learning Mathematics". *MALIM: Jurnal Pengajian Umum Asia Tenggara 22 (2021)*, p. 308-315.