CHAPTER 1

INTRODUCTION

1.1 Introduction

Arabic for STEM (A4STEM) is a module where students learn Arabic as an enrichment for studying the Arabic language for STEM. This module consists of five chapters. Each chapter of this module presents one subject component of STEM i.e., Science, Technology, Engineering, and Mathematics. This module has been in use for one year. This study will investigate the effectiveness of A4STEM module in helping students to understand all the STEM subjects, academics, researchers, administrators, and students who can manifest the precepts of Islam through tasks entrusted to them. Additionally, Mohd Rushdan (2018) stated that USIM's holistic and balanced achievements, because of the integration agenda, have boosted the uniqueness of USIM at both national and international levels.

This integration process of Naqli and Aqli elements is guided by four levels, or (mustawa), which are:

i. Ayatisation (al-Ta'sil): The uses of Qur'anic verses, hadith, or Islamic scholars' writings in lectures.
ii. Comparison(al-Muqaranah): The similarities and differences between Islamic and conventional knowledge from the Islamic worldview.

iii. Adaptation (al-Takyif): The process of selecting, filtering, adapting, and using principles, values, and frameworks that are not against Islam so that students are accustomed to the Islamic environment.

iv. Integration (al-Takamul): The curriculum is aimed to present students with the current disciplines of knowledge and industries which are in line with Islam, and at the same time exploring the development of knowledge-based on a new knowledge paradigm for the future (Mohd Rushdan 2018: page no 32).

According to Wan Mohd Fazrul (2018), the integration of Naqli and Aqli knowledge is one of the main agendas of the university realized through the philosophy and vision of the university as follows:

i. University philosophy: the blend of Naqli and Aqli knowledge and noble values is the main core of forming an excellent generation and a knowledgeable society.

ii. The vision of the university: to integrate Naqli and Aqli knowledge to transform and produce value to the nation, ummah and mankind.

Furthermore, INAQ also focuses on Arabic language teaching and learning as an important language that Malaysians should learn to achieve its goals. The Arabic language has a unique position in the context of the society in Malaysia. This uniqueness refers to its selection as a medium for bringing the message of Islam to the whole world. In addition, all Muslim religious charities have directly related to the use of the Arabic language.

According to Rosni Samah (2009), in the beginning, the Arabic language developed in the relationship between Arab traders and the local community as a language of communication or communication in trading. Indirectly through trades, the Arabic language was developed and introduced in Malaya. According to the study by al-Nadawi et.al (1990), the theory that correlates the arrival of Arabic language with the emergence of Islam in Malaysia is not surprising because Arabic is the key to understanding Islam, in the sense that it is the language of the Quran and hadith.

The history of the Arabic language in Malaysia began with the arrival of Islam in the region. The people of Malaya began to recognize Arabic letters and sounds in several religious practices closely related to the Arabic language. However, the Arabic language at that time had not been studied specifically because the focus was more on the teaching of the Quran and Fardhu Ain (the performance of obligatory acts by Muslims, including prayer, charity, fasting, and pilgrimage).

The early stages of Arabic teaching began with the use of pondok system. This education system is the first formal education system that was first introduced in the Malay world (Solahuddin Ismail, 2014). It was created to meet the demands of the Muslim community which requires perfect and in-depth guidance especially matters related to faith and worship.

The teaching practice of pondok system is often one-way. An instructor or a teacher will read the book in Arabic and explain to the students. Notes will be taken by students throughout the process. However, there is no clear record of the exact date on when it was first implemented.

The curriculum is focused on Tawhīd (a study on the concept of Allah is one), Tafsīr (the interpretation of the Quran), Fiqah (knowledge about Islamic legal rulings from their sources), Hadis (religious science of the study and evaluation of the Islamic hadith), Nahu (basic parts of grammar in Arabic to know the position of a word in a sentence and the last letter or literal form of a word), Tasawwuf (the mystical expression of Islamic faith), and Tarīkh (knowledge about history).

Subsequently, this study continued to develop with the existence of a religious school in the middle of the day. The informal setting of the pondok system was continued until the establishment of a more formal, systematic, and structured religious education in 1960s. According to Noor Hisham and Nasrun (2017), all these institutions offer a diverse and distinctive approach and curriculum design. There are institutions that offer Quran recitation programs at degree level, diplomas for SPM graduates, secondary school, primary school, pre-school level, and childcare centre.

Each of these private institutions has its own set-up and implementation methods that vary from one another. There are institutions that give full attention to the Quran memorization alone (Noor Hisham Md Nawi et al. 2015). While some other institutions give balance to several other components with varying rates apart from the memorization of the Quran, such as academic studies offered by mainstream schools, studies in relation to old religious texts (Turāth) in Arabic, science subjects, and certain skills, such as vocational and others (Noor Hisham Md Nawi et al. 2015).

Then, there are other types of education institutions that were built based on the previous religious education system. Among the new institutions that adopt this system is Kolej GENIUS Insan (KGI), which is a school for gifted and talented students focusing on the fields of pure and social sciences. The school also focuses on the important aspects of the Quran and Sunnah through the integration of Naqli and Aqli knowledge with the aim to produce Islamic scholars. Combining both INAQ and gifted-talented components, KGI has developed its own curriculum to build its students into becoming prominent Islamic figures. KGI is also the only institution that combines INAQ in its gifted talented education.

In this study, the researcher will study how Arabic language is being implemented in the INAQ-based curriculum. This study is the first in Malaysia to explore the use of this concept as part of the teaching and learning of language in STEM subjects. The researcher will cover various aspects from the A4STEM module including effectiveness, advantages, disadvantages, as well as suggestions for improvements.

1.2 Statement of the Problem

USIM is known as the centre of Integration of Naqli and Aqli knowledge. The concept is manifested in and applicable to all faculties and centres in USIM. This includes KGI, a school for the gifted and talented, situated on campus. Furthermore, KGI also places great importance on the use of Arabic language among students during the teaching and learning process.

Before beginning to develop provision for gifted and talented students it is necessary to understand just what is meant by these terms, and how they apply to children in classrooms. There is large variation in the range and breadth of definitions of gifted and talented students, and little consensus on a satisfactory definition. This lack of clarity led Gagne to remark that the concept of giftedness is at times difficult to defend because it is "defined too loosely while being measured too restrictively" (Gagne, 1995, pp 104).

As mentioned earlier, KGI is an educational institution that provides education for gifted and talented students of science stream. KGI focuses mainly on the connections between science and the miracle aspects of the Quran and sunnah through the integration of Naqli and Aqli knowledge. These are manifested in the two compulsory components of KGI curriculum: Research and Arabic language. It is expected that with these emphases, a great generation of holistic Muslim scholars with excellent mastery of Arabic can be created. Hence, mastering Arabic language is essential.

KGI is also one of the gifted and talented secondary schools located in a university. It is based on a school-in-campus concept for gifted and talented students. The students are educated based on INAQ curriculum. The Arabic 4 STEM module is a very important component in the teaching and learning process in almost every subject. This module is suitable to the knowledge integration of Naqli and Aqli for gifted talented students' education.

There is no Arabic language that covered STEM. This module is new component in INAQ, unique for gifted education for Muslims young scholars, new component for Arabic language in STEM. There is Arabic language that covered communication, special use and ibadat. This module has not been shared with any other research to ensure its suitability, reliability, and validity for this target group of students. Furthermore, this initiative is the first of its kind in secondary schools in Malaysia, where gifted education and integration between Naqli and Aqli and knowledge are integrated, making it a one-of-a-kind experience.

The data from this research will fill the gap of studies on Arabic language proficiency. The data will help to answer whether A4STEM is able to improve KGI students' Arabic language skills. This study introduces the first ever module of Arabic language called A4STEM, designed for STEM subjects learned in secondary school in Malaysia.

1.3 Objectives of the Study

This study will answer the following objectives.

1. To analyse KGI students' use of Arabic Language in learning STEM subjects.
2. To investigate the ideas/suggestions on improving Arabic language using 4 STEM Module.
3. To identify the significant impacts of A4STEM in improving KGI student's Arabic language skills.

1.4 Research Questions

The general purpose of this research is to explore the effectiveness of A4STEM on Kolej GENIUS Insan students' interest towards Arabic language learning. The research questions of this study are given below:

1. How do KGI students use Arabic in learning STEM subjects?
2. What are the impacts of the implementation of A4STEM module to upgrade Arabic language for gifted students in KGI?
3. How does Arabic 4 STEM module improve KGI students' Arabic Language proficiency?

1.5 The Significance of the Study

The researcher believes that this study is important from many aspects as it is the first research in Malaysia that discusses INAQ based learning for students of secondary level. It is also significant as it is the first study in Malaysia that explores the use of Arabic Language for STEM subjects.

KGI is the only gifted school in Malaysia implementing the gifted and talented curriculum with the integration of Naqli and Aqli. The success of this module may be one of the contributing factors to the excellence of the students, not only in Arabic language but also in STEM subjects.

This module may facilitate and assist in the teaching of Arabic language. It helps teachers to further develop techniques for teaching Arabic and to foster deep interest among students towards learning the Arabic language. As the nature of the module is online interactive, it is the first of its kind that is designed to teach STEM subjects to gifted students.

Learning using this module may help cultivate deep interest in students to learn and master Arabic language. as this language is the second language in Malaysia. Additionally, this study examines the impacts of the module through enjoyable learning experience such as they practice their technological hobbies, designing posters, videos, or answering puzzle quizzes. In addition, this module encourages student-centred learning, which develops students' self-reliance, confidence, critical thinking skills, and problem- solving skills.

1.6 Scope of the Study

This study may have a limited scope of samples as the respondents for the interview are selected only from the Foundation 2 students This study will be relying on the interview as the data of this research. Hence, data will be qualitative. This interview only focused on the learning process and Arabic language only.

Due to the COVID-19 pandemic, the interview will be conducted using the Microsoft Teams (E-Meeting) for safety reasons.

1.7 Research Theoretical Framework

1. Gifted Education

There are many theoretical concepts of giftedness. But those of Francoys Gagné and Joseph Renzulli are the two most famous ones. Others include Robert Sternberg's Theory of Successful Intelligence and Howard Gardner's Theory of Multiple Intelligences.

a. Gagné: The Differentiated Model of Giftedness and Talent proposes a clear distinction between giftedness and talent. In his model, the term giftedness designates the possession and use of untrained and spontaneously expressed natural abilities (called aptitudes or gifts) in at least one ability domain to a degree that places a child among the top 10% of his or her age peers. In contrast, the term talent designates the superior mastery of systematically developed abilities (or skills) and knowledge in at least one field of human activity to a degree that places a child's achievement within the upper 10% of age peers who are active in that field or fields. His model presents five aptitude domains: intellectual, creative, socio-affective, sensorimotor and "others" (e.g., extrasensory perception). These natural abilities, which have a clear genetic substratum, can be observed in all task children are confronted with in the course of their schooling.(Gagne, 1985: Gifted Child Quarterly, 29, 103-112.)

b. Renzulli: Gifted behaviour occurs when there is an interaction among three basic clusters of human traits: above-average general and/or specific abilities, high levels of task commitment (motivation), and high levels of creativity. Gifted and

talented children are those who possess or are capable of developing this composite of traits and applying them to any potentially valuable area of human performance. As noted in the Schoolwide Enrichment Model, gifted behaviours can be found “in certain people (not all people), at certain times (not all the time), and under certain circumstances (not all circumstances).” (Renzulli, 1978: page 60, 180-181.)

2. Integration Of Naqli And Aqli (INAQ)

The concept of integration of Naqli and Aqli knowledge is to combine the knowledge of revelation and intellect-based sciences that are seen as separated by the West, the secularists, and even some Muslims (Mahyuddin Hashim et al., 2018). Mahyuddin Hashim et al. (2018) emphasize that the understanding of the integration lies on one’s awareness on taking both knowledges as one.

Although the word 'integration' carries the meaning of the process of combining and harmonising the two knowledges of Naqli and Aqli, it is not intended to recognize and acknowledge the separation and dichotomy between the two. This is because theoretically, both knowledges are considered as one, in which the knowledge of Aqli is rooted from Naqli (Mahyuddin Hasim et al., 2018).

The concept of integration of Aqli and Naqli is important and needs to be learned to face the challenges of the increasingly competitive world (Idris Ahmad, 2021). Idris Ahmad (2021) asserts that this is in line with the opinion of the previous Islamic

scholars, who insisted that knowledge should be learned in a unified manner in order to produce competent and excellent students.

The purpose of 'integration' here is to realign the understanding of Secularism that is the grip of today's society that separates the sciences of Naqli and Aqli. It is the process of combining and re-aligning the two sciences until it is understood that the two sciences are one, and not separate (Mahyuddin Hasim et al., 2018).

3. Meaningful Learning

Learning can only be said to be meaningful when it is interrelated with a learner's previous life experiences, as present in that learner's cognitive structure, and when the learning content is compatible with that structure, as stated by Ausubel (1963), who was the first person to propose the idea of meaningful learning (Mubarok et. al.,2022).

According to Vargas et. al (2022), meaningful learning is a strategy for the implementation of teaching-learning processes that are based on the reality of practise and that promotes student autonomy in order to achieve the maximum result. This strategy was developed to achieve meaningful learning.

The process of learning something meaningful requires that the learner understands the meanings of the new material being learned, makes connections with

the new ideas and assertions, and expands, reorganises, and reconstructs the existing cognitive structure (Vargas et. al, 2022).

Vargas et. al (2022) also pointed out that deep meaningful learning is a high level of thought and development is required for deep meaningful learning, which is accomplished through intellectual engagement in questioning, critical thinking, problem solving, and metacognitive skills that are oriented to the construction of meanings through patterns of recognition and association concepts.

Noraishah et. al. (2022) stated that learners are required to independently construct their own bodies of knowledge according to the constructivist theory, which led to the development of the concept of meaningful learning. In a similar vein, one can acquire the capacity to develop new knowledge and understanding by reflecting on either one's own experiences or the experiences of others.

The goal of meaningful learning is to 1) encourage student participation in the form of active learning experiences. Students are encouraged to take an active role in meaningful activities in which they manipulate objects and environments and then observe the results as meaningful experiences when they participate in meaningful learning. 2) For students to engage in meaningful learning, rather than merely receiving information, they must actively construct their own bodies of knowledge. 3) The concept of "meaningful learning" refers to the idea that students will be more successful in their educational pursuits if they work together and interact with one another. 4) Authentic learning refers to a method of instruction that encourages students to engage in the investigation, discussion, and construction of meaningful concepts and

relationships through the use of real-world problems and projects that are pertinent to the students' lives. 5) The final and most important dimension is the intentional one, which examines the ways in which students' learning experiences address their motivations and goals (Mubarok et. al, 2022).

Each of the five meaningful learning dimensions illustrates several key features that must be included in the teaching and learning process in order for it to be considered successful. These features are as follows: I an active cognitive process; (ii) active and comprehensive participation; (iii) recognition of individual differences; and (iv) reflection (Noraishah et. al., 2022).

1.8 Operational Definitions

Before further discussing this topic, first, the researcher would like to explain some important terms in the title of the study.

1. Effectiveness

The ability to be successful and produce the intended results (American Dictionary, 2022).

2. INAQ

INAQ is an acronym for Integration of Naqli and Aqli. It is USIM's fundamental concept that aims to produce academics, researchers, administrators, and students who can manifest the precepts of Islam through tasks entrusted to them.

3. Blended Learning

Blended learning is the thoughtful integration of classroom face-to face learning experiences with online learning experiences (Muxtorjunovna, 2020).

4. A4STEM

A4STEM is an acronym for Arabic for Science Technology Engineering and Mathematics. It is a module designed for gifted students to learn Arabic language and as an enrichment subject for studying the Arabic language for STEM subjects.

5. Kolej GENIUS Insan (KGI)

Kolej GENIUS Insan is a school specially established for gifted and talented students aged 11-17. It is a program built by the Universiti Sains Islam Malaysia (USIM) under the Ministry of Education that aims to produce future Islamic scholars.

6. Interest

Interest is displayed through affective and cognitive elements that may be related to a positive emotional experience, personal relevance, and a willingness to put in a lot of effort (Arikpo and Domike, 2015).

Arikpo and Domike (2015) elaborate that interest can be known as a phenomenon that results from a person's interactions with their surroundings. According to Sitti Ariasiti (2019), interest and human personality are closely related interest is a component of personality that is typically characterised according to things or activities, such as music, sport, or science.

7. Homogenous Study

Placing students with comparable teaching levels together so they can work on topics best suited to their individual strengths and areas for improvement is known as homogeneous grouping in an educational context (Beth Lewis, 2019).

1.9 Conclusions

In summary, this chapter introduces and enlightens the readers on the aspects of the A4STEM module designed based on the concept of INAQ implemented with the gifted and talented curriculum leads to problem statement by discussing the relationship between A4STEM module and Arabic language learning among students of Kolej GENIUS Insan. Furthermore, the chapter also states the purpose of the research which

is to study the effectiveness of A4STEM module on the interest of students of Kolej GENIUS Insan in Arabic language learning. Two research questions are presented, and the questions determine the methodology of the study. Some research terms are provided to avoid confusion to the readers. This study has an emphasis on KGI, educators as well as students. Finally, this study also states its limitation on the small scope of samples that prevent the finding from being generalised to a bigger population i.e., all gifted and talented schools in Malaysia.