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Contextualising Maqāsid al-Sharī'ah and STEM (Science, Technology, Engineering, and Mathematics) education in the era of the Industrial Revolution 4.0

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Abstract. The Maqāsid al-Sharī'ah is one of the disciplines that has been given a unique space in various fields of study nowadays. Though a plethora of studies touched on Maqāsid al-Sharī'ah, it rarely linked to the area of STEM education. This phenomenon is crucial in ensuring that the education world is in the mould of the Maqāsid al-Sharī'ah while at the same time realising the pure will of the Islamic Legal System. STEM Education in the image of the perfect Maqāsid al-Sharī'ah is believed to be able to shape and produce good people in the future, especially in driving a very challenging industrial revolution. Through a qualitative approach using document analysis, this study attempts to draw out the basics of education by the Maqāsid al-Sharī'ah that can form the perfect and proper thinking. Subsequently, the investigation continued by discussing the elements of the Maqāsid al-Sharī'ah identified in these fundamentals. The paper revealed that four main components identified in this issue, namely, the belief in good faith, noble morals, Sharī'ah-based thinking, and professionalising the world. All of these elements acquired by humans through the process of education. The implication is that the study found that placing the STEM education world in the purview of the Maqāsid al-Sharī'ah should be an influential agenda of national education to drive and meet the challenges of industrial revolution 4.0. Therefore, this effort should be the attention of the national education policymakers who must involve scholars in the field.

1. Introduction

Islam is the way of life that the almighty Allah passed down through various messengers for all humanity. It is the revelation to all humankind via the devotion to Allah SWT not only for this world but also hereafter. Hence, the implementation of Islamic law is a trust that has been established for all humankind [1]. Allah SWT has established several trusts in humanity, including beliefs of faith, trusts of the mind, trusts that do not betray trust and trust as caliphs in this world [2]. Human development, in particular, is abided to the quest to fulfil through a process of education based on a Maqāsid al-Sharī'ah [3,4]. It should also be noted that Islamic law cannot be practised except by educating each individual according to the Maqāsid al-Sharī'ah mould. This will give birth to good people who are



kind and produce a community and a generation that can fulfil the trust that God SWT has established. This paper is indispensable since the Maqāṣid al-Sharī'ah is a model of *syumul* (complete) and can be the backbone of all aspects of life [4–6]. However, studies on Maqāṣid al-Sharī'ah in education, especially concerning Science, Technology, Engineering and Mathematics (STEM) have rarely been explored and focused on in any art or thesis, whereas studies of Maqāṣid al-Sharī'ah in other fields such as economics and judiciary have been extensively written. Hence, this study aims to review and focus on the right elements of Maqāṣid al-Sharī'ah in STEM education. These elements are believed to be the most fundamental framework in the nation's education and could ensure that generations born of the nation's future education can successfully cope with the progress of industrial revolution 4.0 in implementing the trust of God. This study uses a qualitative approach. Data and information related to this study were collected using document analysis methods from secondary data. Numerous works of literature have been scrutinised and analysed. The flow of this paper starts with the epistemological aspects of Maqāṣid. Next, the discussion of this paper had elevated to the elements of Maqāṣid al-Sharī'ah in the context of STEM education before the concluding remarks that wrapped up the discourse.

2. Defining Maqāṣid and Education

The term Maqāṣid is derived from the Arabic words means to ask for something, to set something, to keep something and to do justice [7]. According to Muhammad al-Zuhaili, the Maqāṣid al-Sharī'ah means the purpose, decision, and secrecy of the Sharī'ah that should be pursued to carry it out and obtain it irrespective of time and place [2].

The term education is derived from the word 'educate,' and education has three meanings, namely education, science and education, and teaching [8]. Education or *tarbiyah* in Arabic is carried some meanings (Expert, 1988), *inter alia*: (i) Grow, (ii) Grow up and grow up, (iii) Repair and master, (iv) Raising children with proper nutrition, guarding against pain and injury and education to the age that enables them to take care of themselves, (v) Climbing, and (vi) Swelling. Hence, *al-Tarbiyah al-Islamiyah* means a process of continual physical, mental, and spiritual building up to perfection [3,9,10]. Thus, when education is integrated with the Maqāṣid al-Sharī'ah, it leads to a broader definition and will encompass all Islamic goals.

The concept of STEM education concept is nonetheless similar to the basic idea of education in general. It has discoursed for many decades among intellectuals. However, the focus is given more to Science, Technology, Engineering, and Mathematics as they are said to be the essential elements especially in the era Industrial Revolution 4.0. The concept of STEM is conceptualised at the personal, educational, political, and societal levels [11]. The STEM (Science, Technology, Engineering, and Mathematics) itself by definition, is self-explanatory. However, in the schooling context, the T and E have rarely been touched as compared to S and M [12]. The subjects of Science and Mathematics have been taught since primary level of education as compared to technology and engineering, which experienced by secondary and higher learners in colleges and universities. In the context of Muslim society like Malaysia, STEM education is aiming at producing STEM literate society at an early age. The cultivation at early age is indispensable to trigger productivity and innovations. Thus, by looking at the conceptual framework of STEM, there is a need to integrate and contextualise the elements of Maqāṣid al-Sharī'ah, especially among the younger generation of Muslim people. They should realise that the Islamic civilisation is indeed rich with the culture of knowledge, especially in science and mathematics. Muslim scholars such as al-Khwarizmi, al-Kashani, al-Buzanji, al-Battani, ibn Ahmed, and ibn al-Haytham were known for their contributions in mathematics [13].

Education in the context of Maqāṣid al-Sharī'ah can be defined as a theory of the formation of a systematic mindset based on Islamic principles, practiced by the individual and society through the process of teaching and learning [4,6,14]. It involved the purification of the soul and the formation of the Ummah as well as the integration of the principles. It is aimed at focusing on the perfection of devotion to God in the world and the success of His pleasure in the hereafter. There are several advantages to this definition, including; (i) Based on Islamic fundamentals or in other words based on

Maqāṣid al-Sharī'ah, (ii) It is practised individually by each individual, (iii) Focusing on the true maqāṣid in education is to produce sound, and good people, and to create a harmonious society, (iv) Keep up to date and apply the latest methods according to the circumstances of the community and place, and (v) Focus on the most critical maqāṣid of happiness in the world and the hereafter.

This definition is very distinct from the philosophy of western education that focuses solely on producing a competent individual in society [15]. The westerners define education as a process by which humans acquire knowledge, skills, habits, values, and attitudes. It is also used to explain the results of the educational process. Ideally, education must make people appreciate the cultural heritage and standards of their lives and produce individuals who are good citizens as citizens who share in the democratic process and as workers in the economy. On the other hand, the philosophy of education from an Islamic perspective is to produce a good human being but not only as an excellent individual to society but also to one's self, life, environment and not against the law of God [16].

2.1. The purpose of Maqāṣid al-Sharī'ah in STEM education

The principal of Maqāṣid al-Sharī'ah is to protect humanity and to protect them from harm in the world and the hereafter [17]. It is because Allah SWT has created man as the perfect being and distinguished them from other creations. Therefore Allah SWT decreasing the Sharī'ah to preserve human happiness in managing this world with His Sharī'ah solely to give blessing and prevent harm to them both in the world and in the hereafter [18]. In this age, with the advancement of communication tools and the forefront of the highly sophisticated industrial revolution of 4.0 with machines and robots, leading to unlimited lifestyles will inevitably result in damage to people's lifestyle. Ibn Khaldun states that the leading cause of loss to society is due to three things [19], that is; (i) Demise of morality, (ii) Difficult way of thinking, and (iii) Anxiety in perception.

The restoration could be made by fixing their thinking [19]. Thus, education is the only way to correct human thought to think well and to be perfect. This is the Maqāṣid of the creation of the human mind which can only be shaped by the process of education which is based on the Maqāṣid al-Sharī'ah in education that produces good deeds among individuals [20]. In the end, people with good deeds will be created that enables the world to be governed correctly. Islam is highly regarded and concerned about education. It is evidenced by the descent of the first verse which talks about reading and writing, which is supposed to produce science [21]. Reading and writing that provide knowledge will inevitably go through an educational process. Indeed, education and knowledge are indispensable parts of building that consist of a collective number of right individuals in a harmonious society of a great civilisation. In this regard, the Holy Qur'an from the beginning has clearly illustrated two basic things in education; (i) Education is fundamental in achieving a complete understanding of the Maqāṣid al-Sharī'ah. This is because all the aspects of Sharī'ah will not be understood practised without education. Through writing and reading, human will preserve the history of the ancient community for their guidance and thinking, and at the same time preserve of religion of Allah [22], and (ii) Education must be based on the belief in the existence and power of the Almighty Allah, The Creator who teaches a man to read and write and to give knowledge to man.

3. Elements of Maqāṣid al-Sharī'ah in STEM Education

Under the spirit of education, and STEM education, in particular, Islam has outlined several fundamental features in perfecting the human education process in the following areas, namely; (i). The building of true belief, (ii) High moral and ethics, (iii) Religious-based thinking, and (iv) Professionalism in managing this world.

3.1 The building of true belief.

Allah SWT has directed the man to sincerely practice what He pleases in every single aspect of their life. The beliefs must be rooted in the soul of every human being. This, in turn, affects the behaviour and morals [3]. It can also be considered a guide to one's actions and acts as a guide to the perpetrator. It is through this humble belief that one can become a devoted servant of God [23]. Hence, the

creation of man is only to practice sincerity and devotion to Allah Almighty. This maqāṣid cannot be achieved except through a process of education based on aversive beliefs. The construction of these beliefs is not confined to children alone, but rather to the individual, regardless of age and level of education. Allah SWT not only want people who are devoted to Him, but also want people who are sincere in their devotion to Him [24].

The continuous process of education will make the truth and ultimate beliefs rooted in the human heart. It is a trait that will further enhance one's worship and practice in leading this world's life as a servant of the Almighty Allah. God also explains that those who have a high level of knowledge will surely have the fear and anger of Allah SWT [25]. The process of educating people is substantial for every human being that is based on trustworthiness and God-fearing (Taqwa). The Holy Prophet (Peace be Upon Him) has shown an example of the importance of education via the narration of one of His sahabah named Abdullah bin Abbas. As the Holy Messenger said:

Children, verily I will teach you a few words: take care of Allah SWT, He will take care of you, take care of Allah SWT, you will find Him always before you, if you ask, then ask Allah SWT, and if you seek help, ask Allah SWT, know that if you gather a group of people for your benefit, he will never be able to do it, except what Allah has decreed for you, and if they gather to hurt you, he will never be able to do anything but that Allah SWT has appointed you, has lifted the pen and dried the paper.

In conclusion, through a firm and steadfast belief, it will bring humanity to happiness as it will protect humanity from misguidedness, cruelty, and according to the desires of the good. Therefore, Allah SWT decreed the laws of aqidah to strengthen human confidence in Him so that they could maintain the religion and self-identity within themselves.

3.2 High moral and ethics

Morals are the rationale and method for shaping human behaviour, and in Islam, it is determined by the revelation of the Almighty Allah. The moral aspect is substantial to organise a human's life and achieve the purpose of living in this world [26]. The formation of good manners and virtues are born as a result of faith and self-confidence that is based on the belief that Allah SWT. This is due to the sincere and robust faith characters in the formation of noble character [16,27].

The Holy Qur'an has mentioned many virtues that should be exercised by human being, and He calls on them to educate them in the same manner. Allah the Almighty has sent the Messenger of Allah to all people to portray great examples of morality [28]. Allah SWT called His believers to teach people to be civilised while seeking knowledge. The learners, in particular, should use proper words and listen carefully to the knowledge conveyed by the teacher. Therefore, good manners will surely bring happiness to people and keep them from harm that can ruin human life, such as fraud, fighting, murder, and so on.

3.3 Religious-based thinking

Education, according to the Maqāṣid al-Sharī'ah, is to nourish the human mind, apart from formulating a moral character and emulating Islamic ideals. These are aiming at achieving the happiness of living for ourselves, our family, and society in every corner of life. Education is also to provide the human mind with three basic things: the universe, the human self, and their experience and role in the world [3]. Allah SWT proposes in His word that man should think of the creation of the universe as full of secrets of teaching [29] and commands people to observe and think about themselves [30]. In this aspect, the Holy Prophet (Peace be Upon Him) has encouraged people to think about how to use their time for the benefit of themselves and society. He said:

List five things before five things happen; your youth before your adulthood, your health before your illness, your precious life before your adolescence, your free time before your busy days, your experience before your time. You're dead.[31]

The above examples illustrate how Allah SWT recommended that people use their mind to think about the events in society following His Sharī'ah rules so that they will be happy in this world and the hereafter. These verses also explain how excellent the education of Allah to be applied to humans, especially in exercising their thinking under His religion [26]. Thus, religious-based thinking will bring them happiness and distance them from harm.

3.4 Professionalism in managing this world.

Education also according to the Maqāṣid al-Sharī'ah is to produce human beings who can manage this world according to the guidelines revealed by Allah SWT, and the example set by the Messenger of Allah (may peace be upon him) [32], as Allah SWT has appointed humans as caliphs in this world to test and see the work done by humanity. Education and science will give birth to a professional man in all the business of being a good servant as they are always seen and observed [33,34].

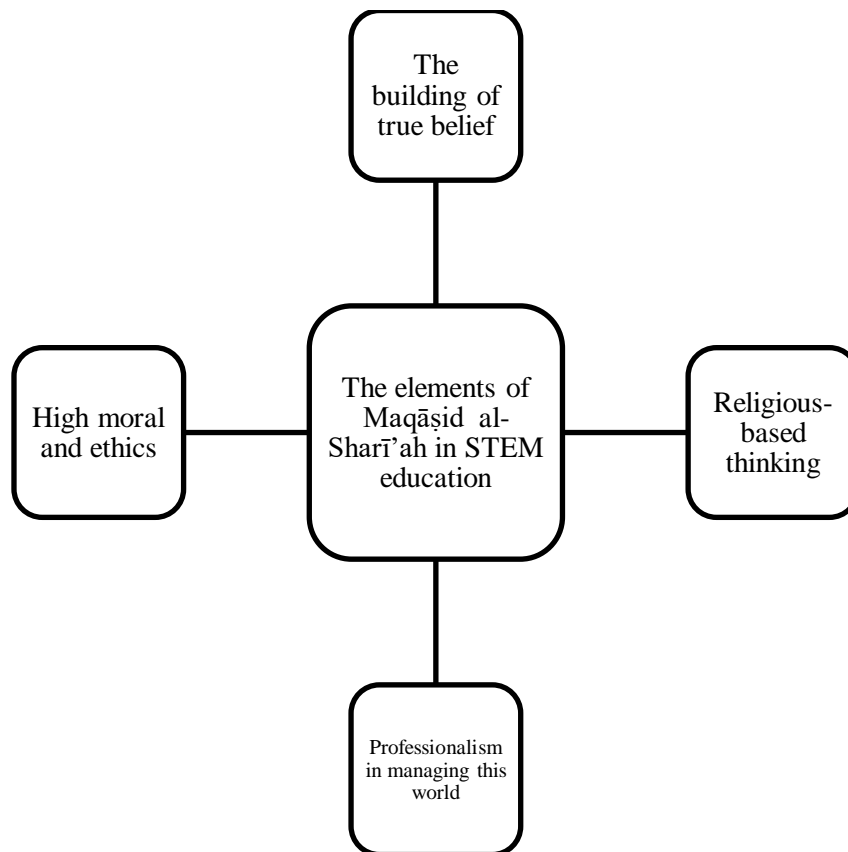


Figure 1. Elements of Maqāṣid al-Sharī'ah in STEM Education

3.5 Driving towards the needs of the Industrial Revolution (IR) 4.0

The industrial revolution is another wave of advanced technological advancements in the world and needs to be addressed as much as possible for the well-being of humanity and the world at large. The discourse of IR 4.0 and STEM education in the context of Maqāṣid al-Sharī'ah are needed to be addressed as both of them are relevant. Therefore, there is a need to discern issues with honest thinking and trust. The STEM education and Maqāṣid al-Sharī'ah is an essential aspect of driving to

industry 4.0 revolution. Moreover, the understanding of both characters is vital to form the right mindset and thus ensure that there is no damage to technology development, infrastructure development, business growth and so on. The principles of Maqāṣid al-Sharī'ah should be applied in the national education system, as it can transform humanities and at the same time embraces a superior way of thinking and moderate values, encompassing aspects of spirituality and higher morale, moral as well as save happiness in the world and the hereafter. It can indeed serve as a model, principle, and framework for driving the industrial revolution 4.0. Hence, Maqāṣid is not only a discipline of knowledge, but it is a comprehensive and comprehensive model that can be adopted as the most basic framework when making important decisions in all aspects of life [5]. Similarly, education based on Maqāṣid al-Sharī'ah will impact the development and development of science and technology to better benefit humanity, the environment, and the world as a whole. It should be seen as a very critical matter because science and technology are not just ways of understanding nature and benefiting from it, but they must be understood in terms of the impact of secular scientific thinking and religious and cultural exclusion. The effects of this secular scientific thinking will surely dominate the reflection of the people, especially the scholars who form the policies of the nation and govern the administration of the country. Thus, divinity and religion are not the main focus of the country's development process [35].

4. Conclusion

In summary, the principle of Maqāṣid al-Sharī'ah must be a priority now and in the future to drive the industrial revolution 4.0 towards greater well-being and harmony for humans and nature, especially in the context of Science, Technology, Engineering and Mathematics (STEM) education. It will shape the human mind by thinking correctly, particularly in the making decision that will benefit the people and distance them from any harm. Accordingly, this is in line with the national aspiration to produce a strong generation of faith, knowledgeable and well-respected morals in driving the 4.0 and the national and international industrial revolution. Therefore, STEM education generics based on Maqāṣid al-Sharī'ah should be produced because they understand the nature of Sharī'ah. It gives the sense that a genuinely thinking generation will manage and protect the world and serve its people according to the Maqāṣid al-Sharī'ah mold.

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