

## The teaching of Islamic science, technology and engineering: The effects on the Polytechnic students of architecture in Malaysia

Mohamad Faisal Ahmad<sup>1</sup>

Mohd Isa Hamzah<sup>2</sup>

Khadijah Abdul Razak<sup>3</sup>

Maria Mohammad<sup>4</sup>

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### **Abstract**

*This study aims at investigating the effects of Islamic Science, Technology And Engineering course towards the changes of attitude, moral and behaviour of students Architecture of a polytechnic in Malaysia. 50 students of Architecture Diploma programmes who had taken Islamic science, technology and engineering course in semester July 2016 were involved in this study. Data were collected using a set of questionnaires regarding the students' perceptions towards Islamic science, technology and engineering course and were analysed using percentage, frequency, t-test and correlation test. The findings show that the overall mean for the increment of the students' understanding and awareness of Islamic science, technology and engineering is 4.41, their perceptions towards Islamic science, technology and engineering course is 4.29, the students' perceptions towards Islamic science, technology and engineering lecturers is 4.55, their perceptions towards daily activities is 4.74 whereby the students' perceptions towards the teaching of Islamic science, technology and engineering course is 4.12. The results of the t-test showed that independent variables had only a little influence on the dependant variables based on the significant level which is 0.05. Apart from that, based on the overall mean and percentages on the changes of the students' attitude, this study found that the Islamic science, technology and engineering course had given positive effects on the students of the polytechnic.*

**Keywords:** Islamic Science, Technology and Engineering, attitude, moral, behaviour, perceptions.

### **1. Introduction**

Islamic science, technology and engineering which is taught in polytechnics and institutions of higher learning in Malaysia has given ample knowledge and has contributed a lot to formal development of students' morality and attitude (García & Ivanescu, 2013). The teaching of Islamic science, technology and engineering aims at building and forming students' characters which consist of noble, polite and obedient. It also cultivates good behavior among students which eventually contributes to the national unity. Islamic science, technology and engineering is also one of the fields of knowledge application which involves formally in producing an ideal individual (Ismail, Hassan, Muhamad, Ali, & Konting, 2013).

According to Kamarul Azmi Jasmi, Ab Halim Tamuri, & Mohd Izham Mohd Hamzah (2012), Islamic studies course is basically a process of training the mind, physical, moral, emotion (*wujudaniah*) and social science in order to be a good individual as well as a good citizen. Based on Kamarul Azmi, Ab. Halim, & Mohd Izham, (2011), the process of shaping an ideal individual is actually an integrated attempt by all parties in order to achieve the main objectives of education

<sup>1</sup> National University Of Malaysia, Bangi, Selangor, Malaysia, [hj.faisal47@yahoo.com](mailto:hj.faisal47@yahoo.com)

<sup>2</sup> Phd, National University Of Malaysia, Bangi, Selangor, Malaysia, [isa\\_hamzah@ukm.edu.my](mailto:isa_hamzah@ukm.edu.my)

<sup>3</sup> Phd, National University Of Malaysia, Bangi, Selangor, Malaysia, [khadijah.razak@ukm.edu.my](mailto:khadijah.razak@ukm.edu.my)

<sup>4</sup> Polytechnic Ibrahim Sultan Malaysia, Johor, Malaysia, [mariafaisal2001m@gmail.com](mailto:mariafaisal2001m@gmail.com)

as well as the nation. Students are the assets of the nation whom will be the generator in developing the nation in the future. Therefore, society has placed a high hope so that these students have really mastered the knowledge on the practice of Islam, the skills and also possess high moral values. It is clearly seen that Islamic science, technology and engineering could affect students' morality and empower the students' attitude.

Due to that reasons, this study is seen significant in the field of teaching and learning of Islamic science, technology and engineering in looking at the effects in shaping students' attitude and morality regardless of the level whether in primary school, secondary school or higher education level (García & Ivanescu, 2013). As investigated by the researchers, there are only a few studies done on the teaching and learning of Islamic Studies in institutions of higher learning. It could be seen that the teaching and learning of Islamic Civilization in institutions of higher learning is capable of producing students with high morality and attitude. However, the students' knowledge regarding the field of Islam that they had received in schools need to be taken into account as well. Hence, with the continuation of knowledge that the students had received, it is believed that the effectiveness of the implementation of the teaching of Islamic science, technology and engineering in enhancing the students' understanding and appreciation about the religion could be increased (Azlina Abdullah, 2010).

## 2. Background of the problem

In the process of developing and shaping an individual whom possess high discipline, morality, excellent personality and ideal; the deterioration of students' morality and social ills are considered as the main obstacles. This has raised a lot of issues in the effectiveness of the teaching and learning of Islamic-based subjects which definitely includes the teaching and learning of Islamic science, technology and engineering. The issue is that many parties would like to know how far the teaching and learning of Islamic-based subjects could affect or contribute in shaping and producing an ideal society.

The development of morality and attitude as well as the development of human capital has been emphasized for quite a long time. Opatokun, Hasim, & Syed Hassan, (2013) has highlighted on the importance of the development of moral values in empowering Malaysian citizen. Buerah Tunggak, (2011) claimed that the deterioration of morality has led to the decrement of moral values therefore resulted in the increment of social ills among students. Even though Malaysia education system has successfully produced intellectual groups, it should be aware that there are still a lot of young people especially students who are with bad attitudes and behaviour. Social ills among students are still happening and in fact keep increasing. It is believed that these bad attitudes and behaviour are caused by various factors which among them are the level of educational background received by the students, family influence, peer influence, mass media and also from their surrounding. Azlina Abdullah, (2010) claimed that some of the factors which influenced students' discipline and attitudes are self-realization, teachers, school, family and also the society.

The main question is what would be the best and suitable way in developing and shaping the students' morality and attitude based on the practice of Islam (Ali Mohammad, 2008). For that reason, this study aims at investigating how far Islamic science, technology and engineering course could influence students' morality and attitude as well as identifying the other factors which

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influence students' morality and attitude in the students' life. The teaching of Islamic-based subjects and courses in higher learning institutions could probably play a role in developing and shaping students' personality (Ismail et al., 2013).

### 3. Research objectives

The general objective of this study is to investigate the effects of the teaching of Islamic Civilization in establishing, developing and shaping morality and attitude of students of polytechnics. The specific objectives of the study are as follows:

- To identify how far Islamic science, technology and engineering could expand the students' knowledge and awareness of Islam.
- To investigate the students' perception towards the Islamic science, technology and engineering course.
- To investigate the students' perception towards the teaching of the Islamic science, technology and engineering course.
- To investigate whether there is a significant relationship between the Islamic science, technology and engineering course with students' attitude and their daily activities.
- To investigate whether there is a significant relationship between Islamic science, technology and engineering course with the change of students' attitude in fulfilling the practice of Islam.

### 4. Research questions

Based on the objectives of the study, the researchers hope to answer the following questions:

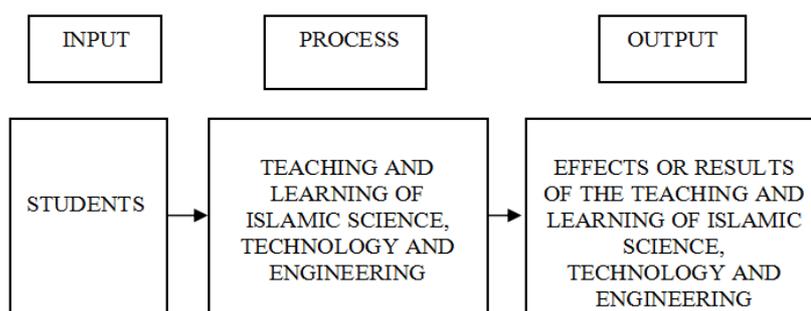
- Does Islamic science, technology and engineering course expand knowledge and Islamic awareness among students of polytechnic?
- What are the students' perceptions towards the Islamic science, technology and engineering course?
- What are the students' perceptions towards the teaching of the Islamic science, technology and engineering course?
- Is there a significant relationship between the Islamic science, technology and engineering course with the students' attitude and daily activities?
- Is there a significant relationship between Islamic science, technology and engineering course with the change of students' attitude in fulfilling the practice of Islam?

### 5. Conceptual framework

The conceptual framework of this study is based on Karts and Kahn's Open System Theory (1966, 1978) which is cited in Ismail et al., (2013). This theory was used to explain the effects of the teaching and learning of Islamic Education in private institutions of higher learning. Because of the suitability of the theory, the researchers then used the theory as a guideline (refer Figure 1)

in this study in order to study the effects of the teaching of Islamic science, technology and engineering. According to Karts and Kahn's Open System Theory (1966, 1978), the process of teaching and learning consists of input, process and output. In this study, the input is the students who are taking Islamic science, technology and engineering course while the process involves teaching and learning of Islamic science, technology and engineering. Output, on the other hand, is the effects or results of the teaching and learning of the Islamic science, technology and engineering course.

Figure 1. Karts dan Kahn's Open System Theory, 1966



Apart of that, the findings of this study will also provide some information on the effects or results of the teaching and learning of Islamic science, technology and engineering on the development of students' morality and attitude. High level of morality is part of a balanced personality which would like to be produced by the integrated education which is based on National Education Philosophy (Ali Mohammad, 2008).

## 6. Limitation of the study

This study was conducted on Muslims students at a polytechnic in Malaysia, involving students of Diploma in Architecture. Only 50 respondents had been chosen and all of them are Muslims. In addition, the scope of the study was limited to only a survey on students' perceptions towards the implementation of teaching and learning of Islamic science, technology and engineering in shaping students' morality. Apart from that, the researchers also looked into the effectiveness of the students' understanding in the learning of the Islamic science, technology and engineering course in shaping their morality. The findings of the study can only represent some of the students of the polytechnic and cannot be generalised to all students of polytechnics in Malaysia. This was due to their different backgrounds in terms of education, experience, social life and family status.

## 7. Methodology

This study employs a quantitative research design which aims at knowing the problems of the implementation of the teaching and learning of Islamic science, technology and engineering course and its relation with social problems among students of institution of higher learning. Questionnaire is used as the instrument of the study. It consists of 54 questions using Likert scale from 5 = "Totally Agree" to 1 = "Totally Disagree". According to Azlina Abdullah, (2010), questionnaires is always used when a researcher intends to investigate a person's attitude by using open-ended questionnaires, checklist or rating scale. The questionnaires is divided into two parts which

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are Part A which is on the students' background and Part B which is on students' perceptions towards the teaching and learning of Islamic science, technology and engineering. One hundred students of Diploma in Architecture programmes who had taken Islamic science, technology and engineering in semester July 2016 were involved in this study. Finally, the data regarding the students' perceptions towards Islamic science, technology and engineering course were analysed using SPSS in the forms of percentage, frequency, t-test and correlation test.

## 8. Findings and discussions

### *The students' background*

Based on the findings of Part A, the students involved in this study comprises 50% of male and 50% of female (refer Table 1).

Table 1. Percentage and frequency according to gender

Gender	Frequency	Percentage (%)
Male	25	50.0
Female	25	50.0
Total	50	100.0

It was also found that 50% of the students were staying in the hostels and the rest (50%) were staying outside of the campus (refer Table 2).

Table 2. Percentage and frequency according to address

Adress	Frequency	Percentage (%)
Hostel	25	50.0
Outside campus	25	50.0
Total	50	100.0

The students were also asked on their educational background (refer Table 3). The findings of the study found that 16% of the students had their taken Islamic stream when they were in the secondary school, whereas, the remaining of the students (84%) had attended normal daily secondary school. The findings are represented in the table below;

Table 3. Percentage and frequency according to educational background

Types of school	Frequency	Percentage (%)
Islamic stream	8	16.0
Normal daily schools	42	84.0
Total	50	100.0

### *Students' perception towards how far Islamic science, technology and engineering course could expand the students' knowledge and awareness of Islam*

Based on the findings, it was found that the students believed that Islamic science, technology and engineering course could increase their understanding of Islam. This is proven by the mean score obtained for the item "*The Islamic science, technology and engineering course could increase my understanding about Islam*" which is 4.81. Apart of that, they also believed that Islamic Civilization course could shape their morality and belief. The study also revealed that the students

believed that the Islamic science, technology and engineering course is an easy course to be understood. This is proven by the mean score obtained for this item which is 4.42.

Overall, it was found that students have positive perception towards how far Islamic science, technology and engineering could improve students' knowledge and awareness of Islam. This is proven by the overall mean score for this part which is 4.41. The finding also showed that the increment of the students' knowledge of Islam is not affected by gender as well as educational background.

#### *Students' perceptions towards the Islamic science, technology and engineering course*

Based on the findings of this study, it was found that the students believed that Islamic science, technology and engineering is suitable to be learnt at all levels. The mean score obtained for this item is 4.69. Apart from that, it was also found that the students enjoyed themselves during the lessons. This is proven by the mean score obtained for the item "*I enjoy myself during the lesson of Islamic science, technology and engineering.*" which is 4.41. They also believed that Islamic science, technology and engineering course is an interesting course to be learnt and that it is at par with other courses offered in the polytechnic. The students also believed that by attending the lessons and learning to understand the content, they are more confident in facing their future.

Overall, the students' perception towards the Islamic science, technology and engineering course is positive. This shows that the students' interest in learning the course is also high. This is proven by the overall mean score which is 4.29. The findings also revealed that the students' perception is not affected by students' educational background. However, it could be seen that gender factor does affect the students' perception towards the course.

#### *Students' perceptions towards the teaching of the Islamic science, technology and engineering course.*

Based on the findings, it could be seen that the students do respects the lecturers who are teaching the course. In addition, they also confident with the knowledge and lessons delivered by their lecturers. This is supported by the mean score obtained for item "*I am confident with the knowledge and lessons delivered by my lecturer.*" which is 4.76. The students also believed that the lecturers did relate the teaching and learning of Islamic science, technology and engineering with their daily life. It was also found that the students were attracted to how the teaching of the course was done. They claimed that their lecturers were good at making jokes when teaching; therefore, it has made them feel interested in learning the course. The mean score obtained for the item related to this is 4.45.

Overall, it could be seen that students have positive perception towards the teaching of the Islamic science, technology and engineering course. This shows that the lessons conducted by the lecturers could attract the students' interest in learning the course. This could be seen from the overall mean score obtained in this part which is 4.55. The findings also revealed that gender, and educational background did not affect the students' perception towards the teaching and the lecturers who teach the course.

#### *Students' perception towards their attitude/daily activities which are related to Islamic science, technology and engineering course*

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In terms of students' perception towards their attitude/daily activities which are related to Islamic science, technology and engineering course, it was found that Islamic science, technology and engineering has educated them in respecting their parents. This is proven by the mean score obtained for this part which is 4.89. The students also believed that Islamic science, technology and engineering teaches them to practise the life as a Muslim. It was also found that the students believed that Islamic science, technology and engineering course had increase their knowledge about Islam. Apart from that, the students also believed that after they have learnt the Islamic science, technology and engineering course, they are more motivated in doing good things. This is proven by the mean score obtained which is 4.66. The students were also asked regarding their opinion on involving in social problems after learning the course. The findings revealed that the students believed that they will not get themselves involve in social problems after learning the Islamic science, technology and engineering course. This is proven by the mean score obtained for item "*After learning Islamic science, technology and engineering, I will not get myself involve in any social problem.*" which is 4.34.

Overall, it was found that the findings of this study revealed that the students have positive perception towards their attitude/daily activities which are related to Islamic science, technology and engineering course. The mean score of this part is 4.74. The findings also show that the students' attitude and daily activities are influenced by their positive perceptions towards the course itself.

#### *Students' perception towards the change of students' attitude in fulfilling the practice of Islam*

Based on the findings, it was found that Islamic science, technology and engineering course helps the students to think before they have to do anything. This is proven by the high level of mean score obtained for the item related to this which is 4.66. It was also found that Islamic science, technology and engineering course could avoid the students from doing things which are against the practice of Islam. The students also believed that after learning Islamic science, technology and engineering course, they are more confident of themselves and are not easy to get themselves influence by their friends to do bad things.

Overall, the findings of the study showed that the Islamic science, technology and engineering course could give effect on the students' change in attitude related to the understanding of Islam, their daily activities and in fulfilling the practice of Islam. This is proven by the overall mean score obtained for this part which is 4.12. This shows that the students' perception is positive. Therefore, the finding revealed that students who are good in their practice and understanding of Islam are those students who are with positive attitude. These students also have high interest in learning the Islamic science, technology and engineering course.

## **9. Implication**

This study has gained some information on the students' perceptions towards the implementation of the teaching and learning of Islamic science, technology and engineering in shaping and developing students' morality. It also provides some information on the students' perceptions towards the Islamic science, technology and engineering course itself, the lecturers who teach the course as well as attitude, practice and understanding of Islam. The findings of this study are hoped to be able to help the lecturers who are teaching Islamic science, technology and engineering course to increase the effectiveness of the teaching of the course in shaping and developing

students' morality. Other than that, the findings of the study could also be used by the administration of polytechnics as the feedback of the implementation of the teaching and learning of Islamic science, technology and engineering in taking suitable steps in order to;

- Organize a course to increase quality of the teaching and learning of Islamic science, technology and engineering.
- Identify or observe the implementation of the teaching and learning of Islamic science, technology and engineering course in all polytechnics in Malaysia.
- Identify the problems and obstacles faced by the lecturers in the teaching and learning of Islamic science, technology and engineering.
- Take initiative in empowering the teaching and learning of Islamic science, technology and engineering in all polytechnics.
- Review the content of the Islamic science, technology and engineering syllabus as to make it more suitable for the students of polytechnics in Malaysia.

Based on the implications of the study on the effects of the teaching and learning on Islamic science, technology and engineering course in polytechnics in Malaysia above, the researchers would like to make the following suggestions;

- A continuous observation and supervision should be made by polytechnic, Ministry of Higher Learning as well as Department of Polytechnic Education and Community Colleges in order to empower the teaching and learning of Islamic science, technology and engineering.
- The responsible parties should solve the main obstacle in the implementation of the teaching and learning of Islamic science, technology and engineering so that the objectives could be achieved.
- Conduct study/studies on the implementation of the teaching and learning of Islamic science, technology and engineering so that the limitations of this study could be reduced so that the findings could be generalized in a wider context.

## 10. Conclusion

The findings of this study have shown that students have positive perception towards Islamic science, technology and engineering course in increasing students' attitude and morality and that it has a significant relationship with activities, attitude and the practice of Islam. These have proven that the guidelines and syllabus of Islamic science, technology and engineering prepared and produced by the Malaysia Ministry of Higher Learning is well understood by the students and lecturers. The high and positive attitude shown by the students could be seen through their daily activities and practice which are considered good. Thus, it is hoped that Islamic science, technology and engineering is made suitable by every party in order to increase students' quality in all aspects. The findings of the study suggest that all educators especially those who are teaching the Islamic science, technology and engineering course should put an effort so that the development of generation that is balanced physically, spiritually and intellectually could be realized. This is also indeed important in strengthening and empowering the quality of the students of Malaysia.

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