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Mapping The Mind Of People Toward Science To Improve The Teaching And Learning of Science in Malaysian Schools

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ABSTRACT

This paper reports the finding of a study to map the interest and perception of respondents toward some issues of science. A strong interest and good perception of the people towards science is a prerequisite for a 'Developed Nation' status. In this research, a total of 400 respondents, male and female from various ethnic and religious backgrounds and from the age of 20 years and above, from various parts of the country. A booklet of questionnaire containing the issues under study, was administered to respondents. Each question was provided with five choices of agreement responses of Likert Scale. The findings indicate that the respondents did not have a strong interest in science, and no conclusive finding on their perception on several issues of science under study was obtained. The findings do not show any significant difference of interest towards science based on ethnic. However results show that Malay respondents were more sensitive towards the relation between science and religion compared to the other ethnics. Based on this finding the authors discuss the strategies to strengthen the interest of the people especially the Malays toward science.

Key words: Mapping, interest, perception, science, ethnics.

Introduction

The progress and the wellbeing of a nation to a large extent, depend on Science and Technology. A developed country is defined as a country which has high Gross Domestic Product (GDP) and the level of industrialization (Jaffery, 2005). To achieve the status of a developed country, depend largely on the number of scientists and researchers. Malaysia falls short of the ratio between the number of scientists and the number of people. In the developed nation which is sixty scientists and researchers per 10,000 people of the country (Mun, C.L. & Su, F.Y.: 2004) At present, the ratio in Malaysia is only 20 scientists and researchers per 10,000 people. The number of scientists and researchers can be reflected by the number of science and technology papers contributed to the international pool of research papers. Malaysia is at 55 of 178 nation contribution toward S & T papers. (MASTIC: 2004)

Science Education in Malaysia:

The government of Malaysia has adopted several policies to improve S & T. Science subject is taught from the primary level up to the middle secondary school. As for the upper secondary level, the authority had stipulated the ratio between science and non science classes to be at 6:4 (Ministry of Education) In the year 2000 the authority made a drastic change in the medium of instruction of science into English, based on the assumption that it was easier to teach and understand science and mathematics in English rather in the mother tongue of the students. The policy has drawn a lot of criticism from the people, especially the Malay educationists groups prompting the authority to retract the policy. After 5 years of the implementation of English as the medium of instruction for science and mathematics, the authority will revert back to the mother

tongue instruction in 2012. The seriousness of the authority in improving S & T has indeed been shown by the policies made, but the success of the policies depend very much on the interest of the people and the students specifically in science and mathematics themselves.

Mapping The Mind Of The People On Science and Technology:

A map is an important assistance for a traveler to arrive at the specific destination. In order to arrive at a specific destination in S & T, a map of the people mind on S & T has to be obtained and subsequently any plans and policies made has to refer to the map. To map the mind of the people toward S & T a research involving 400 respondents, male and female from the age 20 and above was conducted throughout the country involving the different ethnics and religious background

One of the issues of the study was the perception of the respondents on the relation between science and religion. Malaysia is a multi-religious and multi-racial country with the Malay forming the majority of the people, followed by the Chinese and the Indian and other smaller ethnic groups. The Malay are mostly Muslim while the Chinese are mostly Buddhist, Taoists, ancestor worshippers or Christian while the Indian are mostly Hindu. In the past, the Malays perception on science and mathematics has been shaped by the assumption that Islam contradicts science and consequently many Muslim children opted for religious schools, which taught only 'religious subjects' neglecting subjects such as science, mathematics geography etc. The Science curriculum introduced by the British has to be blamed because it included the subject of evolution in biology in which it was stated very clearly that human being originated from ape. Because of the economic and education level of the Malays at that time was relatively low, so the number of science and mathematics teachers from the community was also low. Most of the science teachers were non-Muslim, drawn either from the ethnic Malaysian Chinese or the peace corps from the United States of America. For the spans of few decades since the independence from the British colonizer, the Malays had fallen behind the Chinese in term of the achievement in of S & T. Hence , this research was focused into two main issues. Issues number 1 is to see if there a significance difference on the interests of the respondents based on religious background. Issues number 2 is to see if there any significance different between the perception on the relation between religion and science based on difference of religious background.

Materials and Methods:

Three questions on the interest in science were posted to the respondents. The questions were.

1. I enjoy reading science
1. Strongly disagree 2. disagree 3. Uncertain 4. Agree 5. Strongly agree
2. Science is enjoyable
1. Strongly disagree 2. Disagree 3. Uncertain 4. Agree 5. Strongly agree
- 3 I always search scientific facts.
1. Strongly disagree 2. Disagree 3. Uncertain 4. Agree 5. Strongly agree

The responses were keyed in into the spss to obtain the min responses. The min responses for each question are displayed in table 1.

Table 1: Mean Responses According To Ethnics.

Ethnic	Question 1	Question 2	Question 3
Malay	3.6133	3.6201	3.242
Chinese	3.6639	3.5574	3.1557
Indian	3.5539	3.5179	2.9464

The Table 1 shows that there is difference of the mean responses. The mean response for the Malay respondents was 3.6133, the mean response for the Chinese respondents was 3.6639 and the mean response for the Indian respondent was 3.5539. The mean 3.6 falls below 4 and 5, which is the mean for high interest on science. To see if these responses were significantly different, a t test was subsequently done. T-test analysis did not show any significance difference between the different ethnic groups' interest in science. After more than five decades of independence, the Malay seems to be at par with the other ethnic in term of interest in science. However, in term of interest on science in general, the respondents showed a low interest in science irrespective of ethnics.

Having identified that the Malay students were at the same interest level as their colleagues, the next step was to identify their perception on the relation between religion and science, since in the past the issue between religion and science had been the stumbling block on the achievement of progress in S & T among the Malays.

Questionnaire On The Relation Between Science and Religion:

Three questions were posted to the respondents. These questions were:

- 4 Science could strengthen the belief in religion.
 1. Strongly disagree 2. Disagree 3. Uncertain 4. Agree 5. Strongly agree
- 5 Science could strengthen the belief in god
 1. Strongly disagree 2. Disagree 3. Uncertain 4. Agree 5. Strongly agree
- 6 Human being originated from apes.
 1. Strongly disagree 2. Disagree 3. Uncertain 4. Agree 5. Strongly agree
- 7 Progress in science should go in tandem with religion
 1. Strongly disagree 2. Disagree 3. Uncertain 4. Agree 5. Strongly disagree

Table 2: Min responses on the relation between science and religion.

Ethnic	Question 4	Question 5	Question 6	Question 7
Malay	4.2034	4.2877	1.7260	4.2615
Chinese	2.9339	2.7131	3.0407	3.8279
Indian	3.1607	3.1429	2.8571	3.75

The mean responses indicate that the Malays were very attached to religion while the other ethnics were not. For instance, question 6 which was “man originated from apes” has been rejected by the Malays while the Chinese and the Indian respondents were close to the middle response i.e. uncertain.

Results and Discussion

The findings show that the Malays, who formed the majority of the people of Malaysia has been found to have the same interest level to S & T as the other ethnic groups, despite the past history of the rejection of science due to the assumption that science contradicted religion. The perception on the relation between religion and science had changed indicated by the response to question 6 i.e. “human being originated from apes” with the min response of 1.7260. The evolution theory says that living organisms evolved from simple cell to complex organism including human being. The theory that man originated from apes was rejected by the Malay respondents. On the other hand, the Malay respondents accepted the proposition that science could bring human being closer to the belief in god and religion as shown by the response to question 4 “science could strengthen the belief in god” with the mean response of 4.2034 and question 5 “science could strengthen the belief in god” with the means response of 4.2877. The Malay respondents also accepted the proposition that progress in science should go in tandem with religion as shown by the response to proposition 7 i.e. Progress in science should be in tandem with religion” with the mean response of 4.2615.

Almost all of the Muslim majority countries are categorized as “the third world countries” or “the South” or “the developing countries”. The low per capital income of the developing countries is caused mainly by the low S & T. The high per capital income for few Muslim majority countries such as Qatar, Kuwait, Bahrain, Saudi Arabia and the United Arab Emirate was as a result of petroleum export, not because of S & T. As such it is very important for the third world countries to invest in S & T. Malaysia, which is one of the Muslim developing countries has been investing on S & T and in a right track of progress and improvement in per capital income.

The study indicated that the Malays who are mostly Muslim are very attached to the religion. They accept S & T with condition attached i.e. science does not contradict religion. As such one of the mean, which could also be used for the other Muslim developing countries is to use religion to encourage the pursue of S & T. The education curriculum at various level should include religion and science including the subject “The Quran and Science”. A research on students in Malaysia show that when they were shown various Quranic verses which describe the universe, they show increased interest in science. There are more than 759 verses in the Quran which describe the nature of the universe or part of the universe. There are Quranic verses which describe cosmology, astronomy, anatomy, botany, embryology, oceanography and others. Scientific discoveries have always match the Quranic verses explanation about the universe or part of the universe. An example of the verses is demonstrated below.

Chapter 21 verse 30:

Have not those who disbelieve known that the heavens and the earth were joined together as one united piece, then We parted them And We have made from water every living thing. Will they not then believe)

This verse is related to biology. In biology, it is claimed that all living organism originated in water and the Quran talks about the aquatic origin of living organism. In Chemistry, the *surah al-Hadid* which is the Chapter of Iron could be shown to the students.

Chapter 57, verse 25:

(25. Indeed We have sent Our Messengers with clear proofs, and revealed with them the Scripture and the Mizan that mankind may keep up justice. And We send down iron wherein is mighty power, as well as many benefits for mankind, that Allah may test who it is that will help Him (His religion) and His Messengers in the unseen. Verily, Allah is Powerful, Almighty.)

The verse 25 of the Chapter of Iron, the Quran describe iron as being send down, meaning it came from terrestrial origin. In Chemistry or Physics, it is taught that the atom of iron could only be synthesized in a star larger than the sun because of the energy needed was so immense, more than what the energy of the sun. When hydrogen and helium were used up for the synthesis of iron, the particular star exploded forming the solar system. The solar system when it was initially formed contain a lot of smaller planets along its orbit and they collided with each other forming bigger planet. The earth was formed from an estimated 10 smaller planet and the last planet which collided with the earth, contained iron and as it impacted the earth, it went into the center forming the iron core and the debris went up and the slowly rained on to the surface of the earth. When the verse “we send down iron” was explained to the students, they were amazed by it and subsequently increased their interest in science.

Another interesting aspect of the chapter was that if the chapter number of the chapters were added together from the first chapter to the 57th i.e. $1+2+3+4+5+6+7+8+9+10+....+.....+.....57=1653$. The sum is equal to the chapter number multiplied by the number of verses (57×29) and also equivalent to the multiplication of the two middle chapters of the Quran divided by 2 i.e. $(57 \times 58)/2=1653$. Two important points which were highlighted to the students were the atomic number and the number of proton of iron which is 26. Here the numerical value of the word *hadid* in Arabic is also 26, and the name Allah is up to the verse 25th in which the word *hadid* (iron) appears and the description of iron is mentioned is 26 times. These are some of the uniqueness of the Chapter Iron. When these uniqueness of the Chapter of iron were explained to the students, they were amazed and became more interested in mathematics.

Conclusion:

Some of the roads leading to the destination have been identified. The interest on science of the Malays were at par with the other ethnic groups despite in the rejection of science in the past as it was assumed that science contradicted religion. However from the means of the interest on science which were obtained through the analysis, the interest could still be considered to be low and insufficient. The Malays were also more attached to the relation between religion and science. The remedy had been identified, i.e. through teaching the subject of “Quran and science”. The suggestion of teaching the “Quran and science” to the Malay students is only a mean to increase their interest on S & T. Once the high interest on S & T has been developed, then the next steps could be undertaken more easily. This method could probably be used in Muslim majority countries such as Indonesia, Bangladesh, Pakistan, the Middle East Countries, North Africa, the Middle Asian countries and others.

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