A STUDY OF STUDENTS' ATTITUDE TOWARDS SCIENCE (ATS) AMONG MATRICULATION STUDENTS IN KOLEJ MATRIKULASI NEGERI SEMBILAN

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ABSTRACT

A growing body of research argues that KPM matriculation students lack the resilience required to survive in a competitive learning environment, hence contributing to a low academic achievement among students in public universities. Furthermore, studies show that the underperforming students are usually female dominated. Attitude research among a sample of matriculation students might share some insight on why matriculation students seemed to frequently underperformed at university level. This study aims to determine the level of students' attitude towards science and whether gender, race, and religious beliefs play a role in students' attitude towards science. A set of Likert scale questionnaires were used to measure ATS among a total of 300 science students at matriculation level. The total reliability of this questionnaire is 0.711. The six constructs of ATS that were tested are Value of Science in Society, Motivation in Science, Enjoyment of Science, Anxiety towards Science, Self-Concept in Science and Correlation between Science and Religion. The outcomes showed that matriculation students showed a high statistical mean point in all six constructs and there is no correlation between gender and students' attribute towards science. The implication of this study is that school leaders should look into other avenues as to the reason behind this debacle and ways to inculcate meaningful learning in our students.

Keywords: Culture of Science, Attitudes towards Science, Matriculation Students' Performance.

INTRODUCTION

In order to ensure that we, as a country stays relevant with the global technological and educational advancement, Malaysia needs to be conscientious in order to produce science literate citizens. We need to improve the quality of our science education system because the future of our country depends on the tenacity of the younger generations to compete in the global market. This tenacity needs to be instilled through meticulous planning process of our science education programme.

The Education ministry is aware of the importance of increasing students' involvement and participation in science and technology. That is why in every education policy construed by the government stresses an important emphasis in science and technology. In fact, in the Malaysia Education Blueprint 2013-2025 (PPPM), it discusses the plan and strategies to enhance students' academic achievement in science (Malaysia 2013),

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which will eventually garner their interest to continue pursuing science as their career options.

This is an important issue because as of 2011, only 45% of the total graduated students were sired from science stream while the percentage of students that repudiated to forgo science course has increase to 15%. In 2015, a report by Academy of Sciences Malaysia (ASM) has shown that only 21% of candidates that sat for their Middle School National Examination (*Penilaian Menengah Rendah,* PMR) are qualified to pursue further education in science. According to the estimates issued by the National Council for Scientific and Research Development (MKPSB), we need about 500,000 scientists and engineers, but the amount we have now is only 17% of the estimations (MOSTI 2012). This may prove to be a hindrance to achieving the Industrial Revolution 4.0 (Selamat et al. 2017).

Scholars has identified that some of the deep-rooted issues to this problem is the lack of scientific affinity in students (Van Griethuijsen et al. 2015). Hence, a myriad of studies has been conducted to identify the factors that might contribute to the students' disdain perception in scientific endeavours. The Ministry of Education has taken precautionary strategies such as promoting scientific thinking and integrating higher order problem solving activities in the national curriculum.

CORRELATION BETWEEN SOCIOCULTURAL CONTEXT AND ATTITUDE TOWARDS SCIENCE

Students affinity towards science are largely contributed by sociocultural contextual factors that have shaped and formed their beliefs long before the implementation of any strategies to enhance students' attitude towards science (Mansour 2011; Robbins 2005). This is based on the findings of social constructivists such as Piaget and Vygotsky whose idea sired the theory of Constructivism. They concluded that meaningful learning is a social process that occurs successfully when individuals are engaged in social activities (Vygotsky 1998). In science education, learning science means seeing the scientific study of the world itself as inseparable from the social organisation of scientists' activities. Hence, it is faulty to consider science as a neutral subject, as it is rather tentative and influenced by the learners' experience and preconceived notions (Stanley & Brickhouse 2001).

Generally, it is vital to understand the importance of relating between sociocultural context and attitude towards science as failing to do so will hinder the ongoing efforts of nurturing students' science affinity. If the scientific learning or ideas contradict with the students 'culture and believe system, the process of meaningful and cognitive learning could not happen. Students' scientific tendency cannot be fostered and learning science will only be considered as a liability, not as a form of passion. This type of students might excel in examinations, however, if they are given the chance to withdraw from science and venture to other discipline, they might certainly do so.

RESEARCH METHODOLOGY

This study used a set of five-point Likert scale questionnaire, namely Harery Instrument (Saad 2007). The total reliability of this questionnaire is 0.711 in which each construct gains Alpha Cronbach points more than 0.60. According to Kerlinger (1986), questionnaires are suitable to be used when Alpa Cronbach point gain more than 0.60. Harery Instrument (Saad

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2007) consist of 50 items measuring students' attitude towards science. Six constructs were tested; Value of Science in Society, Motivation in Science, Enjoyment of Science, Anxiety towards Science, Self-Concept in Science and Correlation Between Science and Religion.

These are some of the questions allocated at each six constructs;

Value of Science in Society: *"Terdapat keperluan menggunakan ilmu sains dalam kebanyakan bidang pekerjaan", "Sains adalah sesuatu yang membantu untuk memahami dunia sekarang"*

Motivation in Science: *"kadang kala saya membaca buku teks sains terlebih dahulu sebelum guru mengajar", ' saya ingin membaca bahan tambahan mengenai sains"*
Enjoyment in Science : *"Saya sangat suka sains", "Aktiviti dalam makmal sains menyeronokkan"*

Anxiety towards Science: *"Saya tidak tertekan apabila seseorang bercakap berkenaan sains dengan saya", "Apabila saya mendengar perkataan sains wujud perasaan suka dalam diri saya"*

Correlation between Science and Religion: *"Sains dapat meningkatkan kesyukuran saya terhadap anugerah ciptaan Tuhan", "Sains mempunyai kepentingan dalam agama"*

A total number of 172 Matriculation students (aged 19 years old) from Kolej Matrikulasi Negeri Sembilan participated in this study and they were chosen by stratified random sampling (Iksan et al. 2006). The sample population was divided into four sub-populations according to their course module. Majority of the students that participated in this study are females, Malay, and from module one course (SDS1), which fits the current populous of Kolej Matrikulasi Negeri Sembilan. Among the 172 participant, 12 samples were considered void due to inconsistency and missing data.

DATA ANALYSIS AND FINDINGS
Students' Attitude Towards Science (ATS)

Construct	Value		Interpretation according to (Munap 2003)
	Mean	Sd	
Value of Science in Society	4.32	0.67	High
Motivation in Science	3.85	0.82	High
Enjoyment of Science	3.97	0.79	High
Anxiety towards Science	3.78	0.99	High
Self-concept in	3.87	0.78	High

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Science			
Correlation between Science and Religion	4.31	0.75	High

DISCUSSION AND IMPLICATION

Data analysis showed that KMNS students hold positive attitude towards science in which they gained high mean points for all items. This is not surprising since the samples are from matriculation college, where most of the students intended to pursue a career in scientific endeavours, whether it be engineers or pharmacists. This study also intended to see whether male students would have shown a lower attribute to science that females.

ATS Comparison between Male and Female

Dimension / Gender		Value of Science in Society	Motivation in Science	Enjoyment of Science	Anxiety towards Science	Self-concept in Science	Correlation between Science and Religion
Male	Mean	4.27	3.84	3.98	3.78	3.88	4.25
	Sd	0.68	0.77	0.81	0.99	0.84	0.83
Female	Mean	4.35	3.85	3.96	3.77	3.86	4.33
	Sd	0.67	0.83	0.78	0.99	0.75	0.72

This study suggests that there are only marginal differences in each dimension between male and female students. A myriad of research has suggested that male students generally have a positive attitude towards science in comparison with their female counterpart (Francis & Greer 1999; Weinburgh 1995). However, nowadays females generally have shown constantly higher academic achievement across subjects including science.

CONCLUSION

This research proved that matriculation students have a high degree of positive perception in Attitude towards Science (ATS). Hence, the next strategy is to focus on how to instil the same sentiment to all the students across country. This can be done by providing autonomy and responsibility to students towards their own learning (Rudduck et al. 1996). Students need to be given more opportunities in science to conduct experiments, experience hands-on practical work and participate in investigations and active discussions(Osborne & Collins 2000).

However, in today's curricula, the way science is being taught and constituted offers little to none opportunities for autonomous learning (Donnelly 2001). While it would be

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difficult to transform the nature of science offered in most curricula, it is important for this problem to be remedied in order to improve the quality of the classroom experience.

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