Faculty of Cognitive Sciences and Human Development

STUDENTS' INTEREST IN LEARNING SCIENCE SUBJECT AND ITS RELATIONSHIP WITH SELF-EFFICACY, SCHOOL, AND FAMILY CONTEXTS IN BAU, SARAWAK

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Master of Science
(Learning Sciences)
2018

UNIVERSITI MALAYSIA SARAWAK

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Final Year Project Report ☐

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PhD ☐

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STUDENTS' INTEREST IN LEARNING SCIENCE SUBJECT AND ITS RELATIONSHIP WITH SELF-EFFICACY, SCHOOL, AND FAMILY CONTEXTS IN BAU, SARAWAK

DORINA ANAK LASAH

A dissertation submitted
in partial fulfilment of the requirements for the degree of
Master of Science (Learning Sciences)

Faculty of Cognitive Sciences and Human Development
UNIVERSITI MALAYSIA SARAWAK
2018

The dissertation entitled **Students' interest in learning Science subject and its relationship with self-efficacy, school, and family contexts in Bau, Sarawak** was prepared by Dorina Anak Lasah and submitted to the Faculty of Cognitive Sciences and Human Development in partial fulfilment of the requirements for the degree of Master of Science (Learning Sciences).

It is hereby confirmed that the student has done all the necessary amendments for examination and acceptance.

_____
(NUR FATIHAH MAT YUSOFF)

Date: _____

ACKNOWLEDGEMENTS

I would like to acknowledge my supervisor, Puan Nur Fatihah Mat Yusoff for her invaluable advice, guidance, and constructive comments throughout the preparation of this thesis. I have learned a lot from her, without her advice and guidance, I could not finish my research successfully.

I am indebted and grateful to all lecturers of Master of Science (Learning Sciences), UNIMAS for the knowledge and wonderful learning experience. Not to forget, my course mates who had helped me so much in my study and while doing this research; I sincerely thank them.

To both my parents Mr. Lasah and Mrs. Rosline who have stood by me and my family, thank you and love both of you so much. To my siblings and in-laws, thank you all for the unconditional support and constantly reminded me to not give up.

To my beloved husband, Halarry Nyambar, your steadfastness and unconditional support allow me to be what I am and can do. Your love surrounds and gives me strength. Thank you and love you so much. To my beloved son, Emmett Emmanuel Jaul who was initially mystified at her mother having to study and leave him during the weekends, I thank you for struggling with me. I love you, Emmett.

To all of you who have provided moral support and, whether directly or indirectly, lent a hand to the successful completion of this work, I thank you.

And most importantly, thank you God, for your unfailing presence and blessings to me and my family.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of variance (univariate)
B	Beta
df	Degree of freedom
F	Fisher's F ratio
M	Mean
MOE	Ministry of Education
MS	Mean square
N	Total number in a sample
p	Probability
R	Multiple correlation
R^2	Multiple correlation squared
SD	Standard deviation
SE	Standard Error
SS	Sum of squares
STEM	Science, Technology, Engineering, and Mathematics
t	Computed value of t-test

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ABSTRACT

STUDENTS' INTEREST IN LEARNING SCIENCE SUBJECT AND ITS RELATIONSHIP WITH SELF-EFFICACY, SCHOOL, AND FAMILY CONTEXTS IN BAU, SARAWAK

The enrolment of science stream students in the secondary schools across Malaysia has seen significant declines over the years. Students' interest is believed to be one of the major contributions to the issues. The main objective of this study is to determine the students' interest in learning Science subject and its relationship with self-efficacy, school, and family contexts by analysing the data of Form 2 students (n= 1038) from three secondary schools in Bau, Sarawak. This study has three specific objectives: (1) to determine the difference in students' interest in learning science subject based on gender; (2) to determine the difference in students' interest in learning science subject based on schools; and (3) to determine the significant factors such as self-efficacy, school context, family context in predicting students' interest in learning science subject. This study uses quantitative and surveys research design. The instrument used in this study is questionnaire which adapted from Hasni & Potvin (2015). The sample is chosen using stratified sampling method and the sample size is determined by Green (1991). The result shows that the students in Bau, Sarawak have the high level of general interest in science. There is a significant difference in students' general interest in learning science based on gender, $t(278) = -3.991$, $p < .001$. The female students have higher general interest in science compared to male students. This is due to the science syllabus in Form 1 and Form 2 are more focusing on themes that related to life science and less physical science. The result also shows that there is a significant difference in students' general interest in learning science based on schools, $F(2,275) = 24.214$, $p < .001$. Schools that actively organising and support students' learning activities can indirectly influence students' interest in learning. Five out of nine predictor variables (teaching method using inquiry process, utility of school science, predisposition and intention to act, teaching method based on student's preferences and self-efficacy in science) in this study are statistically significant at F-value of 57.338, $p < .001$ and $R^2 = .513$. This study found out that teaching method using inquiry process is the most dominant factor that affecting students' general interest in learning science in Bau, Sarawak. However, in this study, the family context does not one of the factors that contributed to students' general interest in science. Thus, the researcher suggests that these five factors should consider in order to increase the students' general interest in Bau, Sarawak.

Keywords: students' interest in learning science, self-efficacy, school context, family context

ABSTRAK

MINAT PELAJAR TERHADAP SUBJEK SAINS DAN HUBUNGANNYA DENGAN KEBERKESANAN DIRI, SEKOLAH DAN KONTEKS KELUARGA DI BAU, SARAWAK

Kemasukan pelajar ke aliran sains di sekolah menengah di seluruh Malaysia telah menampakkan kemerosotan yang ketara sejak beberapa dekad yang lalu. Minat pelajar dalam subjek Sains dipercayai merupakan salah satu penyumbang besar kepada isu tersebut. Objektif utama kajian ini adalah untuk menentukan minat pelajar dalam pembelajaran subjek Sains dan hubungannya dengan keberkesanan diri, sekolah, dan keluarga dengan menganalisis data pelajar Tingkatan 2 (n = 1038) dari tiga buah sekolah menengah di Bau, Sarawak. Kajian ini mempunyai tiga objektif khusus: (1) untuk menentukan perbezaan minat pelajar dalam pembelajaran mata pelajaran sains berdasarkan jantina; (2) untuk menentukan perbezaan minat pelajar dalam mempelajari subjek sains berdasarkan sekolah; dan (3) untuk menentukan faktor-faktor penting seperti keberkesanan diri, konteks sekolah, konteks keluarga dalam meramalkan minat pelajar dalam pembelajaran subjek sains. Kajian ini menggunakan reka bentuk penyelidikan kuantitatif tinjauan. Instrumen yang digunakan dalam kajian ini adalah soal selidik yang diubahsesuai daripada Hasni & Potvin (2015). Sampel dipilih dengan menggunakan kaedah pensampelan berstrata dan saiz sampel ditentukan oleh (Green, 1991). Untuk mencari jawapan bagi objektif-objektif khusus di atas, data dianalisis dengan menggunakan sampel bebas T-ujian, One-way ANOVA, dan regresi berganda. Hasil dapatan menunjukkan bahawa pelajar-pelajar di Bau, Sarawak mempunyai tahap kepentingan umum dalam sains yang tinggi. Terdapat perbezaan yang signifikan dalam minat pelajar terhadap pembelajaran sains berdasarkan jantina, $t(278) = -3.991$, $p < .001$. Pelajar perempuan mempunyai minat yang lebih tinggi dalam sains berbanding pelajar lelaki. Ini disebabkan sukatan pelajaran sains dalam Tingkatan 1 dan Tingkatan 2 lebih memberi tumpuan kepada tema yang berkaitan dengan sains hayat dan kurang menumpukan kepada sains fizikal. Hasil dapatan dalam kajian juga menunjukkan terdapat perbezaan yang signifikan dalam minat pelajar terhadap pembelajaran sains berdasarkan sekolah, $F(2,275) = 24.214$, $p < .001$. Sekolah yang aktif menganjurkan dan menyokong aktiviti pembelajaran pelajar secara tidak langsung mempengaruhi minat pelajar dalam pembelajaran sains. Lima daripada sembilan pembolehubah ramalan (kaedah mengajar menggunakan proses siasatan, utiliti sains sekolah, kecenderungan dan niat untuk bertindak, kaedah pengajaran berdasarkan keutamaan pelajar dan keberkesanan diri dalam sains) dalam kajian ini menunjukkan keputusan yang signifikan secara statistik pada nilai $F=57.338$, $p < .001$ dan $R^2 = .513$. Kajian ini mendapati bahawa kaedah pengajaran yang menggunakan proses siasatan adalah faktor paling dominan yang mempengaruhi minat pelajar terhadap pembelajaran sains di Bau, Sarawak. Walau bagaimanapun, dalam kajian ini, konteks keluarga bukan salah satu faktor yang menyumbang kepada kepentingan minat umum pelajar dalam sains. Oleh itu, penyelidik mencadangkan bahawa lima faktor ini harus dipertimbangkan untuk meningkatkan minat umum pelajar di Bau, Sarawak.

Kata kunci: minat pelajar dalam pembelajaran sains, keberkesanan diri, konteks sekolah, konteks keluarga

CHAPTER ONE
INTRODUCTION

1.0 Introduction

This chapter provides an overview of the study and consists of the background of the study, statement of the problems, objectives of the study, research framework, the significance of the study, limitations of the study, definition of terms and conclusion.

1.1 Background of the Study

In an effort towards a developed nation, Malaysia needs to fulfil the requirement for the field of work involving Science, Technology, Engineering, and Mathematics (STEM) much higher compared to other fields. Lack of talents and insufficient human resources in STEM might have the negative consequence on the Malaysia effort to expand more on technological innovations and become a high-income country.

Halimanton (2016) reported that Malaysia need to fill the gaps along the entire STEM talent chain to meet the requirements of 2020 and a strategic framework is essential to guide human capital development in science and technology sectors. Therefore, the Ministry of Education (MOE) plays an important role in preparing competitive students in terms of intelligence and skills in facing the 21st-century challenges.

MOE also provides a solid foundation by introducing science subjects starting from early primary school to upper secondary school to ensure Malaysia can provide sufficient skilled STEM human capital in driving the country's economic development (Malaysia Education Blueprint, 2013).

1.2 Statement of the Problem

Despite the importance of science subjects in developing Malaysia to be of equal and compete with other developing countries, the percentage of science stream students in the secondary schools across the country has seen significant declines over the years.

The growing gap between the science stream students offered by the schools and the social demand in this regard showing a growing need for the scientific and technical expertise, while the number of students attracted to it is declining.

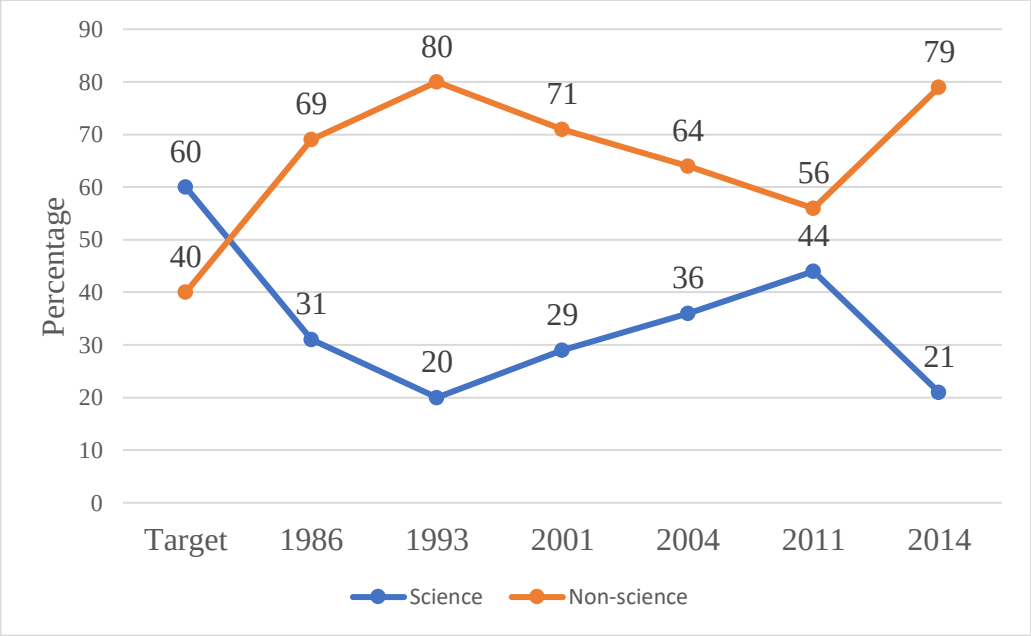

Figure 1.1 The percentage of science students to non-science students in Malaysia. Adapted from Halimanton (2016).

To answer the issue above, many studies have been conducted and observed in many countries such as England, Germany, United States, Canada and also in France (Hasni & Potvin, 2015). From the findings, the researchers strongly address that the main contribution to this issue is the students' interest in science subjects and they also recommended that several aspects such as cultural and educational milieu should be included since the interest in learning science subjects seem to depend on these two contexts (Ainley & Ainley, 2011; Hasni & Potvin, 2015; Krapp & Prenzel, 2011).

In Malaysia, most of the previous studies focused on one or two factors that may contribute to declining number of science enrolment in Malaysia such as the studies on teaching methods, students' perception in science, teachers' pedagogical content knowledge in Science (Phang, Abu, Ali, & Salleh, 2014).

Therefore, this study attempts to answer the general research questions as below:

i) What is the level of students' general interest (GI) in Science subject?

ii) What are the factors that influence their GI in Science subject?

1.3 Objectives of the Study

The main objective of this study is to determine the level of GI in learning Science subject among Form 2 students in the secondary schools in Bau District, Sarawak and the factors that influence it. Specifically, the objectives of the study are as follows:

i) to describe the selected demographic characteristics of the respondents.

ii) to describe the level of students 'general interest in Science subject in Bau, Sarawak.

iii) to describe the level of factors that influence students' general interest in Science subject in Bau, Sarawak.

iv) to determine the difference in students' in general interest Science based on gender in Bau, Sarawak.

v) to determine the difference in students' general interest in Science based on schools in Bau, Sarawak.

vi) to determine the significant factors in predicting students' general interest in Science subject in Bau, Sarawak.

1.4 Research Framework

The research framework of the study is designed to show the relationships among the variables as illustrated in figure 1.1. The dependent variable in this research framework is students' general interest in Science while the independent variables are self-efficacy, school, and family contexts. The study also will investigate the influence of gender and ethnicity on students' interest in learning Science subject.

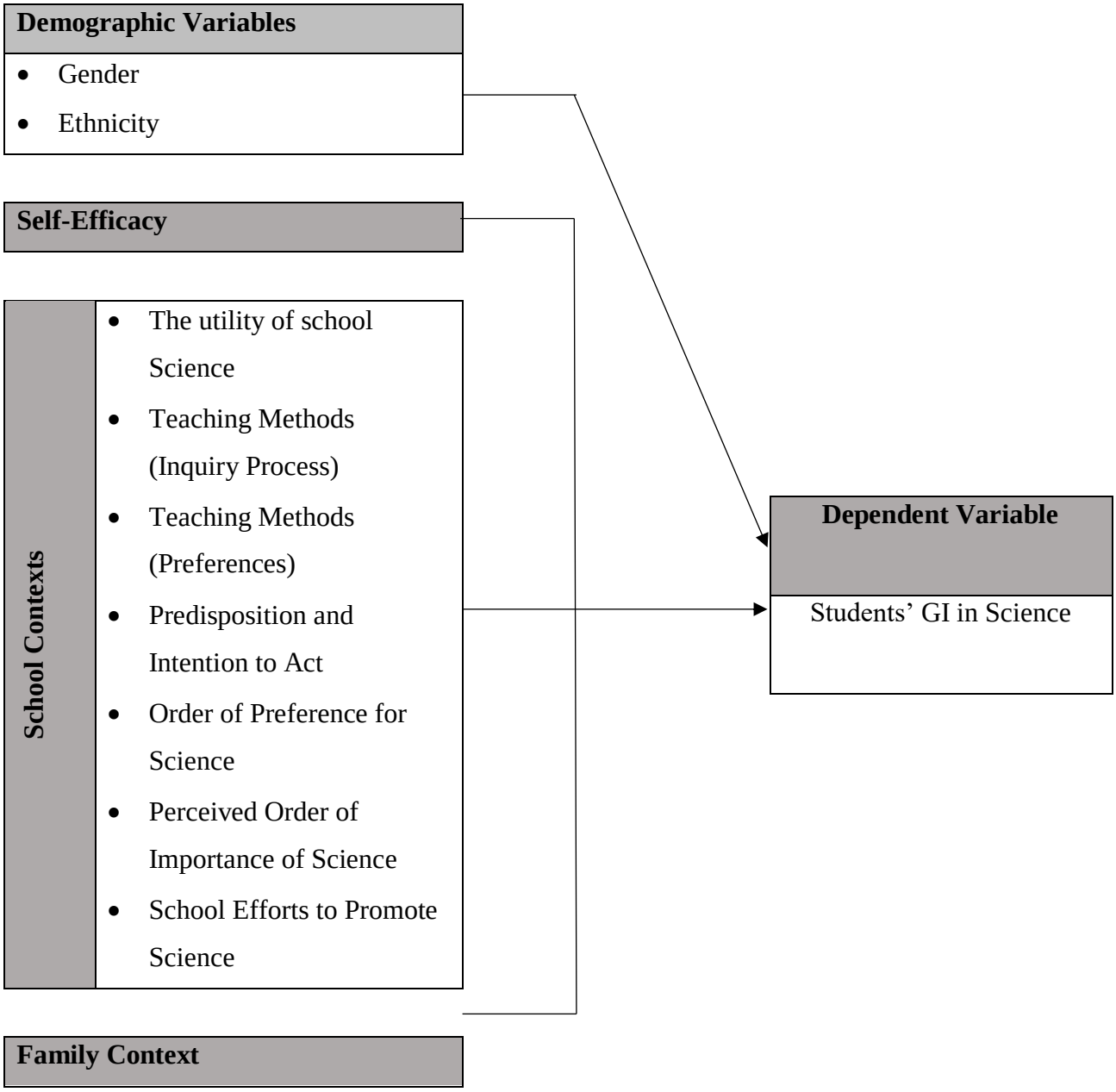

Figure 1.2 Research Framework for the Study

1.5 Research Hypotheses

In relation to the objectives of this study and based on the research framework, the following hypotheses are formulated:

Ho_1 : There is no significant difference in students' general interest in Science based on gender.

Ho_2 : There is no significant difference in students' general interest in Science based on schools.

Ho_3 : None of the nine independent variables has a significant influence on the students' general interest in science.

1.6 The Significance of the Study

The findings of the study are beneficial to the science teacher, students, parents, and policymakers.

1.6.1 Knowledge

The study may enrich the literature in this research areas of interest in learning science subject. The findings of the study could help in enlightening the factors that may influence students' interest in learning science subject.

1.6.2 Practice

The result of the study could empower educators, curriculum developers, and teachers plan strategies and approaches in developing the interest in learning science

which could correspondingly enable them to achieve higher achievement in the science subjects. In the light of the study, it is hoped that the relevant parties of the society will aware of the issue of other factors attributes on students' interest in learning science subjects.

1.6.3 Methodology and Instrument

The study contributes to the research methodology where the methods and instruments used in conducting this research can be replicated by other researchers to conduct their studies.

1.6.4 Policy

Through the study, it is hoped that the policy-makers will consider the suggestions that will be found in this study and coming out with the guideline to overcome the issue the low enrolment of science stream students among Malaysia's secondary schools.

1.7 Definition of Terms

This section attempts to define operationally several terms that will be used throughout this study.

Table 1.1
Definition of terms

Terms	Operational Definition
Students' general interest	Form 2 students' general interest in learning science subject in Bau, Sarawak.
Self-efficacy	The way Form 2 students in Bau, Sarawak feel, think, and motivate themselves in learning science subject.
School context	The schools' efforts and values in promoting science subject to the Form 2 students in Bau, Sarawak.
Family context	The students' family efforts and values in encouraging the Form 2 students to learn science subject in Bau, Sarawak.