

MOTIVATIONAL FACTORS IN LEARNING CHEMISTRY AMONG CHINESE NATIONAL-TYPE SECONDARY SCHOOL STUDENTS IN NEGERI SEMBILAN

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ABSTRACT: The purpose of this study is to investigate the internal and external motivational factors in learning Chemistry among Chinese National-Type Secondary School students in Negeri Sembilan. This study is also aimed to find out the relationship among motivational factors and academic performances in Chemistry. This study also aimed to find out the dominant motivational factor in learning Chemistry among the factors studied. A total of 203 Form Four students from all three Chinese National-Type Secondary Schools in Negeri Sembilan were chosen to participate in this study by using random sampling method. The motivational factors in learning Chemistry were measured with the self-constructed questionnaires. The reliability coefficient of Alpha Cronbach for the items in this study was 0.816. Pearson Correlation was used to test the relationships among motivational factors and academic performances in Chemistry among students. Results of the study showed that all seven factors studied were the factors in motivating students to learn Chemistry while friends was the most dominant factor among all. All seven factors were related to each other and the students' academic performances in Chemistry. Implication of the study and recommendations for future research also being discussed.

ABSTRAK: Kajian ini bertujuan untuk mengenalpasti faktor-faktor motivasi dalaman dan luaran dalam pembelajaran Kimia antara pelajar-pelajar di Sekolah Menengah Jenis Kebangsaan (Cina) di Negeri Sembilan. Kajian ini juga bertujuan untuk mengenalpasti hubungan di antara faktor-faktor motivasi dalaman dan luaran serta hubungan mereka dengan pencapaian akademik Kimia. Selain itu, kajian ini bertujuan untuk mengenalpasti faktor motivasi yang utama di antara faktor-faktor yang dikaji dalam pembelajaran Kimia. Seramai 203 orang pelajar Tingkatan Empat dari ketiga-tiga buah Sekolah Menengah Jenis Kebangsaan (Cina) di Negeri Sembilan dipilih secara persampelan rawak sebagai responden. Soalan soal selidik yang dibina sendiri digunakan untuk mengukur faktor-faktor motivasi dalam pembelajaran Kimia. Nilai kebolehpercayaan Alpa Cronbach untuk item-item dalam kajian ini ialah 0.816. Pearson Correlation digunakan untuk mengkaji hubungan antara faktor-faktor motivasi dengan pencapaian akademik Kimia di kalangan pelajar. Dapatan kajian menunjukkan kesemua tujuh faktor yang dikaji adalah penting dalam motivasi pembelajaran Kimia antara pelajar manakala rakan menjadi faktor utama di antara semua faktor. Kesemua tujuh faktor berhubungkait antara satu sama lain dan mereka juga berhubungkait dengan pencapaian akademik Kimia. Implikasi kajian dan cadangan kajian lanjutan juga dibincangkan.

Keyword: Penilaian Menengah Rendah (PMR), Sijil Pelajaran Malaysia (SPM), Sijil Tinggi Persekolahan Malaysia (STPM), Ministry of Education (MOE), Statisical Package for the Social Science (SPSS), Education Planning and Research Division (EPRD), Universiti Teknologi Malaysia (UTM)

INTRODUCTION

The ultimate objective that we should aim for is Malaysia is a fully developed country by the year 2020. This was mentioned by our former Prime Minister, Tun Dr. Mahathir Mohamad towards achieving the Vision 2020. We are putting the greatest hope that Malaysian who born today and the years to come will be the last generation of our citizens who will be living in a country that is called 'developing'. Chemistry plays an important role in bringing our beloved country, Malaysia into a developed country to fulfill the Vision 2020. Malaysia should not be developed only in the economic sense but also fully developed along

all the dimensions which are economically, politically, socially, spiritually, psychologically and culturally. Therefore, the process of learning is vital as children and teenagers nowadays will become the leaders of our nation in future.

Problem Statement

From the background of the study, Chemistry is an elective science subject offered at the upper secondary level. Chemistry is one of the compulsory subjects to be taken in SPM together with Biology or Physics, or both of them, according to the packages. However, Chemistry is one of the most important branches and had been regarded as a difficult subject for young students by Chemistry teachers, researchers, and educators (Haluk Ozmen, 2004). Some students cannot score good results in Chemistry because they lack of motivations in learning Chemistry.

If experienced teachers are asked, “What is the single most important student characteristic for successful studies in chemistry?”, their answer is often something like: “Being motivated”, “Having a genuine interest in the subject”, or “Showing willingness and a desire to learn” (Berg, 2005). Therefore, the willingness and desire for secondary school students in learning Chemistry are vital for them to get good results. There is no doubt that motivation is an important factor controlling the success of learning. Teachers face problems when their students do not have motivation in learning.

Motivation is one of the key variables in students' learning processes. This hypothesis has been widely accepted by different schools of thought, such as Schiefele and Rheinberg (1997) and Boekaerts (2001). If university teachers are asked, what is the most important student characteristic associated with successful studies, they usually mention traits such as attitude, motivation, and genuine interest. Similarly, questions about the importance of attitude (Dalgety *et al.*, 2003), and of motivation (Covington, 2000) have been investigated by many educational researchers. Thus, that is a need for teachers to know more the methods to increase students' motivation in learning Chemistry.

In this study, discussions were focused on the students' motivation in learning Chemistry. Aspects of students' motivation to learn can be classified as either intrinsic or extrinsic (Etwistle *et al.*, 1974). The applications of motivation in all teaching and learning process are significant because they create life-long learning process towards an individual. Both intrinsic and extrinsic motivational factors contribute to students in learning more thus become a better human being.

In this study, investigations were done on the motivational factors in learning Chemistry among Chinese National-Type Secondary School students in Negeri Sembilan. This study focuses on both intrinsic and extrinsic motivational factors contributing in learning Chemistry. Intrinsic motivational factors of students' attitude and interest in learning were studied while extrinsic motivational factors covered teacher, family, friends, environment, and language used in teaching and learning process. Therefore, this study stressed on both intrinsic and extrinsic motivational factors that found in students themselves which motivating them towards Chemistry learning. The main purpose of this study is to reveal the motivational factors that helped students in achieving good results in Chemistry.

Objectives of the Study

From the problem statement, objectives of the study are listed below:

- i. to investigate the internal motivational factors (attitude and interest) in learning Chemistry among Chinese National-Type Secondary School students in Negeri Sembilan.

ii. to investigate the external motivational factors (teacher, family, friends, environment, and language) in learning Chemistry among Chinese National-Type Secondary School students in Negeri Sembilan.

iii. to investigate the relationship among motivational factors and academic performances in learning Chemistry among Chinese National-Type Secondary School students in Negeri Sembilan.

iv. to investigate the dominant motivational factor in learning Chemistry among Chinese National-Type Secondary School students in Negeri Sembilan.

Significance of the Study

i. The study works as a guideline for those who interested in investigating the motivational factors in learning Chemistry among Chinese National-Type Secondary School students.

ii. The study benefits Chinese National-Type Secondary School students by revealing the motivational factors in learning Chemistry in helping them to increase their academic performances in Chemistry.

iii. The study works as a guideline for parents of Chinese National-Type Secondary School students in helping them to know the influences of family as the motivational factors towards students' academic performances in Chemistry.

iv. The study benefits schools and teachers in Chinese National-Type Secondary School by revealing the motivational factors in learning Chemistry thus suitable workouts might done to increase the academic performances of the students.

v. The study works as a guideline to Ministry of Education, State Educational Department and District Educational Office in increasing motivation level among Chinese National-Type Secondary School students in learning Chemistry.

Scope of the Study

The scope of the study includes:

i. The study focused on the internal motivational factors (attitude and interest) in learning Chemistry among Chinese National-Type Secondary School students in Negeri Sembilan.

ii. The study focused on the external motivational factors (teacher, family, friends, environment, and language) in learning Chemistry among Chinese National-Type Secondary School students in Negeri Sembilan.

iii. The study focused on the relationship among motivational factors and academic performances in learning Chemistry among Chinese National-Type Secondary School students in Negeri Sembilan.

iv. The study focused on the dominant motivational factor in learning Chemistry among Chinese National-Type Secondary School students in Negeri Sembilan.

METHODOLOGY

Sample

A sample is a smaller group selected from a larger population (in this case, the population of Form Four Chinese National-Type Secondary School students in Negeri Sembilan) that is representative of the larger population. Samples allow researchers to work with a smaller, more manageable subgroup of the realistic population. Sample is chosen from the entire population or a randomly selected sample of a larger population (Lodico, Spaulding, and Voegtle, 2006). According to Najib (1999), sample size is encouraged to be more than 30 units with the assumption that normal distribution is fulfilled when sample size is above 30.

There were total of 395 Form Four science stream students from all three Chinese National-Type Secondary Schools in Negeri Sembilan who study Chemistry were chosen as respondents from the population. The amounts of respondents were fixed to be at least of 196 students from all three selected schools by referring to the Sample Size Table of Krejcie and Morgan (1970)

Random sampling is a technique or tool that produces essentially a miniversion of the initial population. Random sampling is conducted in such a way that every person in the population has an equal and independent chance of being selected (Lodico, Spaulding, and Voegtle, 2006). This means that when a person is selected, it does not affect the chances of anyone else being selected. The students from each school were randomly selected where the subgroups were critical to create a sample that represents the entire population.

Instrumentation

In this study, primary data had collected from the questionnaires distributed. There were two sections for each set of questionnaires. Section A was about the demographic data of the respondents whereas section B was the questionnaire items regarding motivational factors in learning Chemistry among Chinese National-Type Secondary School students in Negeri Sembilan.

Pilot Study

Pilot study is a preliminary and usually small-scale research study that serves as dress rehearsal and prepares researcher for major study that will be carried out later. It is important to carry out pilot study because it helps researchers to find out either any section of the questionnaires has any mistake, or items that needed to be changed or deleted before continuing to the real research (Lodico, Spaulding, and Voegtle, 2006). This is to ensure the reliability of the research instruments. Besides, the pilot study ensure the students' understanding on the research instruments which means they understand the language used and situation stated in the items of the research instrument.

According to Najib (1999), Alpha Cronbach is used as one of the statistical tool to get the reliability coefficient of the research instrument. Items with the reliability index value more than 0.7 can be used as a measuring tool to carry out a study. The reliability of the items in the research instrument was analyzed by using Statistical Package for Social Science (SPSS) version 16.0.

Referring to reasons above, a pilot study was conducted to test the reliability and the validity of the questionnaires used as instrument in the actual research. The pilot study had been carried out on October, 2008. Thirty copies of questionnaires were randomly distributed to the Form Five secondary school students in Chi Wen High School, Negeri Sembilan. The Form Five secondary school students in Chi Wen High School were chosen since they have the same background with the respondents in the study.

DISCUSSION

Demographic Data

In this study, demographic data analyzed school, gender, course, Chemistry grade, occupation of parents/guardian, occupation of family member, living area, and will to change the course of the respondents. The data analyzed summaries that this study been carried out evenly throughout the state of Negeri Sembilan in which all three Chinese National-Type Secondary Schools were involved in the study. Locations of three Chinese National-Type Secondary Schools were at Seremban, Kuala Pilah, and Bahau. Besides, this study was evenly distributed to respondents by having almost equally half of respondents in the aspects of respondents' gender and living area.

From the data analyzed, results showed that respondents were hardly scored excellently with grade A and on the same time they were hardly fail in Chemistry. Most of the respondents were in the scoring range from grade B to grade D where were in the standard range. This implies that Chemistry was an elective science subject that needs much of motivation to motivate students in learning Chemistry to score flying colour results.

Data analyzed showed that most of the parents, guardians, and family members of the respondents were not working in chemistry-related field. This implies that the backgrounds of respondents were not influenced by their family. However, the high statistical value showed the willingness of respondents to change the course from science stream into art stream implies that respondents were unsatisfied in studying electives science subjects. Furthermore, the low percentage in the ranking Chemistry as favorite subject among science and mathematics subjects by respondents showed that respondents were unhappy in learning Chemistry. This was due to contributions of numerous factors which include internal and external motivational factors that were being studied.

CONCLUSION

This study revealed both internal and external motivational factors in learning Chemistry among Chinese National-Type Secondary School students in Negeri Sembilan. Despite of the methodological limitations and nature of the instrument used in the study, results from the study showed there existed relationships among all seven motivational factors and students' academic performances in learning Chemistry. Internal motivational factors of attitude and interest were related to external motivational factors of teacher, family, friends, environment, and language. Both internal and external motivational factors were significant to students in learning Chemistry. Motivational factors studied were found to have relationship with the students' academic performances. The most dominant motivational factor in learning Chemistry for Chinese National-Type Secondary School students in this study was friends.

In overall, this study provides supportive information towards motivational factors in learning Chemistry among Chinese National-Type Secondary School students in Negeri Sembilan. However, there were some weaknesses found in this study that needs further research to be done into complement of this study. Hopefully this study does contribute to increase the learning motivation among Chinese National-Type Secondary School students with the efforts from all parties concerned. Education that brings our beloved country a brighter future should be the most concerned issue from all.

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