

The Minimum of Male Students in Chemistry Education Study Program: A Phenomenological Research

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Abstract

Chemistry education study program is one of the study programs tries to print qualified teachership human resources in the field of chemistry with various available facilities and mediums. Several studies showed that department of teachership and education is little interesting to men. More specifically, chemistry education study program in some universities have fewer men than women. The purpose of the study is to find out the reasons cause the least number of male students in the chemistry education study program. The method used in this research is phenomenological research with qualitative approach. The research was conducted at various campuses in Yogyakarta with a total of six informants. Two of them are chemistry education students and four others are students of physics education, biology education, pure chemistry and chemical engineering. The research instrument consists of question items in the form of interview guidelines. The results of interviews then formulate to be a coding to facilitate the researchers in concluding. The reason for the number of male students in the chemistry education study program is less than the female students are among other they feel have better mastering in other fields of science than chemistry, such as biology and physics; they are less interested in the profession of teachers; students who choose the chemistry education program are performe to choose the study program.

Keywords: Male students, chemistry education, interests.

Introduction

Interests is a psychological factor which can determine people's choices. Interest is one of the most powerful and important psychological factors for a person's progress and success. In addition, interests is a psychological factor which can establish a choice in a person. Interests always relates to the abilities, needs, and experiences of the individual. The statement is supported by Djamarah (2003: 132), that "Interests is a sense of preference and a sense of interest in a thing or an activity without anyone order it".

Interest to be a teacher means a person's pleasure in working and feeling attached to the job without anyone else command it. Interest is something that is personal

and closely related to attitude. Interests and attitudes are fundamental to prejudice, and the interests is also important in making decisions. According to Giyatama (1990: 6), interests is classified into two: intrinsic interests and extrinsic interests. Intrinsically interests can arise because of the influence of gender. Between men and women have different interests. Extrinsically interests can arise because of the influence of socioeconomic status. When the economic status is good, people tend to expand their interest to include things that they have not been able to do. Conversely, when the economic status is bad or poor because of family responsibilities or less advanced business, then people tend to narrow their interest. There are also students who enroll the faculty of teachership and education science are due to the perforce since not accepted in other faculties and because of other factors that affect their interests. There are also students who enroll the FTES due to he is not accepted in the desired faculty.

Chemistry education study program is one of the study programs tries to print qualified teachership human resources in the field of chemistry with various facilities and mediums available. Department of Chemistry Education is one of departments tried to produce qualified teacher in chemistry field. Faculty of Mathematics and Natural Sciences (MNS) is the organization of higher education as well as one of the centers of science, technology, and science development. Faculty of Mathematic and Natural Science as the implementer of higher education was also a center of science and technology development. However, students who have enrolled the study in the Faculty of MNS have different interests even in the same family of knowledge.

Man and woman have different interest in the profession. There are several explanations mention that there is sex differences in determining interest in the profession. Fasih (2006: 71) said that sex is a distinct trait attached to men and women constructed by social and cultural circumstances. Besides, parents of the students in MNS faculty have different socioeconomic status. According to Roucek and Warren (1962: 60) stated that "Socioeconomic status is a place or position of person in a social group in order to meet their needs and achieve prosperity". Abdulsyani (2002: 86) argued that indicators can determine the

socioeconomic status are: 1) Have a wealth of economic value; 2) Status is a basic material of function in a work; 3) Piety in religion; 4) The racial background and the length of time a person lives in a place; 5) Basic status of generation; 6) Basic status of sex and general. Economic aspects, social status, gender and spiritual aspects can be used as the basis for classification of social class in society.

Most parents whose high socioeconomic status tend to have interest that their children to work in fields such as engineering, psychology and health. Because they consider that teaching profession is less prestigious in society. This is due to many things, one of which is the possibility of the teacher profession is considered less able to provide economic welfare guarantee for themselves and their families when it is viewed from the level of income. While parents who have low social status tend to be interested in that their child have teacher profession because in terms of fees the profession of teachers does not require too high fees.

Several studies showed that faculty of teachership and education sciences is little interesting to men. More specifically, the chemistry education program in some universities have fewer men than women. Several university generations also show that the number of men in the chemistry education study program is less. Between men and women have different interests in the profession. Therefore, the purpose of this research is to find out the reasons cause the least number of male students in the chemistry education study program.

Interest

Interest is defined differently by some experts but it has the same goals. Each expert defined it in accordance with the views and disciplines of their own. Desire or interest and willingness or will greatly affect the style of action that will be done by someone. Interest/desire is closely related to the attention they have. Because of attention leads to the people will. Will or willingness is also closely related to the physical condition of a person for example in a state of sickness, tired, lethargic or maybe on the contrary condition of healthy and fresh. It also closely related to psychological conditions such as happy, unhappy, strained, passionate and so on (Sobur, 2003: 246).

According to the complete dictionary of psychology, interest is (1) a continuous attitude that reflects a person's attention, thus makes him/herself to be selective toward the object of interest, (2) a feeling states that an activity, work, or object is invaluable or meaningful for the individual, (3) a state of motivation, or a set of motivations, lead(s) to behavior toward a particular direction (in Chaplin, 2008: 255).

According to Crow & Crow (in Abror, 1993: 112) interest is something related to the motive power drives us to tend or be attracted to people, things, activities or can be in the form of effective experiences stimulated by the activities. Rast, Harmin and Simon (in Mulyati, 2004: 46) stated that in the interest there is the main things includes: (1) the presence of feelings of pleasure in the self that causes attention to focus on a particular object, (2) the presence of attachment to a particular object, (3) the presence of activity on certain object, (4) the presence of tendency to try more active, (5) the object or activity is considered to be functional in life and (6) a tendency to direct and influence individual behavior. The definition of interest according to Shaleh (2004: 262) is a tendency to pay attention and act on the people, activities or situations that are the object of that interest with a feeling of pleasure.

Thereby, the interest is a tendency or direction of desire toward something to fulfill the impulse, the interest is an inner impulse that affects the motion and will to something, is a powerful impetus for a person to do everything in realizing the achievement of goals and ideals that become his desire.

1. Factors affect interest

Sujanto (1986) said that the interest can be influenced by several factors, that are:

- a. Knowledge, that is to find in a person then it is necessary the presence of knowledge or information about the activities or objects of their interest.
- b. Observation, is the process of knowing the outside world by using the senses.
- c. Response, that is the observation image left behind in awareness after observing.
- d. Perception, which involves the entry of messages or information into the human brain.

- e. Attitude, is the human self-awareness that moves to act accompanying humans in response to objects.

Interest is influenced by factors such as knowledge, reaction to the stimulus, perceptions to the stimulus and the attitudes toward the stimulus being faced in the form of a conscious feeling in response to the object.

2. Aspects of Interest

According to Hurlock (1978: 116) aspects of interest are as follows:

a. Cognitive aspect

Based on the concepts students develop about areas related to interest.

b. Affective aspects

The emotional weight of the concept that builds the cognitive aspect of interest is expressed in the attitudes toward activities aroused by interest.

Interest is a psychological aspect that is influenced by affective experiences derived from interest itself. Aspects of interest were described by Pintrich and Schunk (1996: 304) as follows:

- a. General attitude toward the activity, i.e, feelings of dislike, to agree or not agree to the activity, generally to a positive attitude or likes the activity.
- b. Specific consciousness for or living the activity, that is decide to like an activity or object.
- c. Enjoyment of the activity, that is individuals feel happy with all things related to the activity of interest.
- d. Personal importance or significance of the activity to the individual.
- e. Intrinsic interest in the content of the activity, that is a pleasant emotion centered on the activity itself.
- f. Reported choice of or participant in the activity, that is individuals choose or participate in an activity.

Aspects of interest arouse attachment power are shaped by two aspects of cognitive and affective in the form of attitudes, individual consciousness, feelings of pleasure, the direction of individual interest, the interest arises from within self, and participate in what is to be interested in.

Methods

The method used in this research is the phenomenological research with a qualitative approach. The his research method is used on the grounds of the researchers would like to see the phenomenon of a minimum of male students in the chemistry education study program. The analysis is based on the reasons of why they chose that course.

The research was conducted in various campuses in Yogyakarta on May 2017 with a total of six informants. Two of them are chemistry education students and four others are physics education students, biology education, pure chemistry and chemistry engineering. The sample selection is based on the researcher's consideration of the reasons that would informants inform due to their choice to chemistry or non-chemistry education. The research instrument consists of question items in the form of interview guidelines. The results of interviews then made to be a coding to facilitate the researchers in drawing conclusions.

Results and Discussion

The interest has an important role for students in determining the course/department that will be taken. Interest factors found in this study were concentration of attention, curiosity, motivation, needs, encouragement from others, availability of facilities and infrastructure, and environmental conditions. Based on the data obtained from the informants, the following are cut of sentences that the researchers classified based on the factors mentioned above:

Table 1. Classification of interview results with non-chemistry students

Factors of Interest to Study	Biology Education	Physical Education	Pure Chemistry	Chemistry Engineering
Concentration of Attention	At the time of high school was less like chemistry. Until now is less interested. I prefer biology... since the childhood is already interested in living things.	From the beginning I really like the physics and I want to know the physics more deeply.	... Everything in the world must contain chemical elements, so I more and more curious about it.	From his own wishes... I used to study in a vocational school for chemical analysts, so I had a basic chemistry.
Curiosity		Chemistry is unique and provides comprehensive insight into the chemical processes I have not yet discovered in the physics		
Motivation	In order that I share my knowledge. Knowledge that is not shared is not useful. Moreover, to be a teacher is now a profession guarantee up to old age.	I does not mean to be a chemistry teacher I still want to explore the science of physics		
Needs		The names of the chemical elements and their application in daily life have not been found		... because it is important to support our lives
Availability of infrastructure and facilities		-	... Used to I think that the university education must be appropriate to the natural science majors, so I choose the chemistry which I pretty like in the natural science.	

Factors of Interest to Study	Biology Education	Physical Education	Pure Chemistry	Chemistry Engineering
			Besides, I had passed it so I did not need to test elsewhere.	
Environmental conditions		Daily life can not be separated from chemical processes		Because of my two older siblings have become teachers, so I want a different profession

Table 2. Classification of interview results with chemistry education students

Factors of Interest to Study	Chemistry Education 1	Chemistry Education 2
Curiosity	"I think chemistry is fun to learn and it is not too complicated"	"I think chemistry is one of challenging subjects in high school. I mean with the challenging here is I learn the things I have not learned and the chemistry is fun."
Motivation	"I am always motivated to teach the importance of chemistry to others, so that later my students do not assume that the chemistry is always associated with a scary thing. And to replace their mindset that chemistry is fun and easy to learn."	
Needs		"I think it is very important because the chemistry is not only about solvents, reactions or compounds. The chemistry also deals more specifically with the things that play a role in our life for the example is the iron corrosion."
Encouragement from others	"Because I am being sued by my parents to be a teacher. So, it such a forcefulness."	
Environmental conditions	"... when I was in 11 th grade of high school, I met a chemistry teacher who could be said to be a killer and sued his students to be discipline. Since that previously I did not understand chemistry but being sued to understand,	"... among the people it can be said that the teacher is someone who is always to be "considered" or to be respected and can give a great influence to society."

	and after I was able to complete chemistry questions I started to like it."	
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Based on the results obtained, the researchers divided the reasons cause the minimum of male students in the chemistry study program into seven sections, those are:

1. Concentration of attention

Concentration of attention here means a passion for chemistry. Based on the interviews with six informants, two informants stated that they liked chemistry, the other two informants did not say that they liked it or not, while two other informants stated that they were more interested in other fields than chemistry. From the results of this statement, it can be said that their attention to chemistry is not great enough.

2. Curiosity

Curiosity to chemistry based on the results of the interview is quite simple. Three informants stated that they wanted to study chemistry because it was unique and challenging. But three other informants did not express their curiosity about chemistry.

3. Motivation

One that causes the minimum of male students in the chemistry education is because of their low motivation to become a chemistry teacher. Two informants stated that they wanted to be teachers because they felt that sharing useful knowledge was useful. However, one of the informants did not want to become a chemistry teacher because he was on a biology education course.

4. Needs

Three informants felt that the chemistry is very important to learn because it is very useful for life. The informants did not know in detail the characteristics between the pure and teachership department. According to the informants when they took on science majors in the high school then the majors they would to choose in the college are also more or less the same.

5. Encouragement of others

Of the six informants interviewed, five informants stated that they chose the majors or study programs that are being undertaken now based on their own decisions. Four of them came from non-education chemistry majors and one informant from a chemistry education course. While one other informant who came from a chemistry education course stated that he felt compelled to take a course of chemistry education. Thus, the actual interest to take the chemistry education study program is very low, since of these six informants, only one informant who actually choose the course of chemistry education because of his own desires.

6. Availability of facilities and infrastructure

One informant stated that access to information related to the majors that will be chosen after graduating the high school is very minimal.

7. Environmental situation

One informant stated that although he liked chemistry, but he did not want to be a teacher because his siblings had become teachers. Therefore the informant wanted to have a different profession. While one other informant stated that he wanted to be a teacher because the teacher is a respected profession and give a great influence in society.

Broadly speaking, the things caused the least number of male students in a chemistry study program while it be based on interest, one should has an interest in chemistry and the field of teachership. Based on the results of the interviews, the informants can be divided into three groups, i.e. the group who like chemistry but do not want to be teachers, the group who want to be teachers but not in the field of chemistry and the group who want to be a chemistry teacher. In this case, three informants included in the group who like chemistry but did not want to be teachers, two informants wanted to be teachers but not in the chemistry field, and one informant wanted to be a chemistry teacher. So from the six informants, only one informant really interested in the field of chemistry and the field of teachership at once.

Conclusion

The reason for the number of male students in the study program of chemistry is less than the female students are:

1. Students feel more mastered well the field of other science than chemistry, such as biology and physics.
2. They are less interested in the profession of teachers.
3. Students who choose the chemistry education program study are compelled to choose the study program.

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