



The Analysis of Student's Interest in the National Examination (UN) of Chemistry at MAN Sleman Yogyakarta

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Abstract

This study aims to identify the difficulties experienced by students in learning chemistry, identify the factors causing the low interest in the National Examination of chemistry and determine students' interest in chemistry in the National Examination. This research is a type of descriptive research with a survey method. The population in this study was 5 MAN in Sleman Regency, and 3 of them were selected as samples. Sampling is done by stratified random sampling based on the value and number of chemical enthusiasts into three subpopulations. Data collection techniques in this study were closed questionnaires, interviews, and documents. The research instruments used were questionnaire sheets, interview guidelines, and documents. Data analysis was performed using descriptive statistics using percentages. The validity of the data used is technical triangulation. The results showed that students' interest in chemistry in the National Examination was included in the low category with 15.2%.



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1. INTRODUCTION

The National Examination measurement, which is only based on the cognitive aspects, also means the ignorance of students' affective and psychomotor intelligence within not conducting a comprehensive assessment (Takrifin, 2009). The process of compiling the National Examination, usually adjusted to the composition of the difficulty level based on Bloom's Taxonomy thinking. Bloom's Taxonomic Revision by Anderson and Krathwohl is a cognitive domain that includes remembering, understanding, applying, analyzing, evaluating, and creating skills (Gunawan&Palupi, 2012). The 2019 UN types of questions are arranged in 3 levels, there are 25-30% of understanding skills as level 1, 50-60% of application skills as level 2, and 10-15% as reasoning skills as level 3 or known as HOTS derived from (High Order Thinking Skills) (BSNP, 2019). The existence of HOTS types in arranging a question is one of the demands in 21st-century learning skills, including a critical, creative, communicative, and collaborative way of thinking. Meanwhile, students find it challenging to answer HOTS questions on the National Examination because HOTS is classified as a high-level standard thinking ability. It is applied to students at a low level in National Examination (Pangesti, 2017).

The low ability to solve HOTS types of questions is caused by the lack of variety in the existing learning system, which only emphasizes the ability of memory (C1), comprehension (C2), and application (C3) (Rochman&Hartoyo, 2018). The application of HOTS types of questions suitable to daily life's

reality can motivate students. Students are no longer busy thinking about abstract things learned in the classes, but they are busy with new things which refer to the existing realities (Shidiq, Masykuri, & Susanti, 2015). One of the subjects of study with many abstract concepts in chemistry (Suyanti, 2010).

Chemistry is the study of nature, structure, energy changes, and chemical reactions, along with material change (Mulyono, 2006). Based on the research finding on many sources, most Senior High School students have difficulty studying chemical materials (Ristiyani & Bahriah, 2016). As the factors which cause the difficulties in learning chemistry, there is the lack of variation in exercises book, lack of deep concept understanding, and lack of interest and willingness of students during the learning process in the classroom (Marsita, Priatmoko, & Kusuma, 2010). Based on the Application of National Examination (PAMER) for the academic year 2017/2018, in Sleman, a few students chose the Chemistry course as their significant interest in the National Exam. MAN 1 Sleman has seven interested students and took a Chemistry Major course in the National Examination, with the average score of the chemistry National Exam being 46.07. MAN 2 Sleman has four significant chemistry students in the National Examination, with the average score of chemistry in the National Exam being 40.00. MAN 3 Sleman with 21 significant chemistry students in the National Examination, with the average score of chemistry course in National Exam, is 52.38. MAN 4 Sleman with 14 significant chemistry students interested in the National Examination, with the average score of the chemistry course in the National Exam, is 37.32.

Meanwhile, MAN 5 Sleman has 20 chemistry major Student enthusiasts in the National Examination, with the average score of chemistry in 20 National Examination is 45.88. Based on the data. It shows that those interested in the national examination (UN) of chemistry in Sleman are very low compared to those interested in biology or physics. The problem above becomes the Research Question and focus of the researcher. The researcher aims to discover why major chemical enthusiasts' National Examination in MAN Sleman has a low number of people.

This research aims to help educators and teachers identify the factors behind students' low enthusiasm and interest in chemistry. Furthermore, this analysis also can identify difficulties experienced by students in learning chemistry. Thus, educators or teachers can conduct learning in class according to the characteristics of students and be able to increase students' interest in learning chemistry.

2. METHOD

Types of Research

This analysis uses a descriptive type of research and is conducted in a survey method. Descriptive research is research that describes the characteristics of the population or the phenomenon being studied. Surveys methods used in education and learning curriculum are helping to collect data about students (Sukmadinata, 2013).

Place and Time of Research

The research was conducted at MAN 1 Sleman, MAN 3 Sleman, and MAN 4 Sleman. This research was held from February 14, 2019, until March 11, 2019.

Population and Research Samples

The research population in this research is students in grade XII MAN Sleman. The research samples used by the researcher come from students of grade XII MIPA MAN 1 Sleman, MAN 3 Sleman, and MAN 4 Sleman.

Data Collecting Technique

Samples were taken based on the Stratified Random Sampling. The population is grouped into three subpopulations based on the score and number of chemistry significant enthusiasts. Then, one of each subpopulation is chosen randomly.

Data Collection Techniques and Instrument

Instruments in collecting the data used in this research are questionnaires, interview guidelines, and documents. The questionnaire used consisted of 27 statements of the question with four answer choices using a Likert Scale. The questionnaire is used to determine the interests of students. Data collection techniques consisted of questionnaires about primary interests, interviews, and documents. The questionnaire about the significant interest in learning consists of students, teachers, material, and National Examination aspects. The Interviews are used to obtain deeper information from students and teachers. The document is used to find out the number of students who chose the National Chemistry Exam.

Instrument Validity and Reliability

The instrument was tested and applied for validation on three lecturers and the validity test using SPSS with Bivariate Pearson correlation system. The instrument was also tested for reliability value with a Cronbach's Alpha result of 0.808, which means the instrument used is reliable.

Data Validity

The validity of the data in this study is classified as triangulation to strengthen the research data. Triangulation is done by combining questionnaires, interviews, and documents.

Data Analysis Technique

Data analysis was performed with descriptive statistics. Student responses were analyzed by converting the highest weighted answers to 4 and the lowest value 1. Then, the formula determines the percentage of scores:

$$\%score = \frac{\text{total score obtained}}{\text{maximum score}} \times 100\%$$

The percentage obtained in this analysis is interpreted by category.

3. RESULTS AND DISCUSSION

Madrasah Aliyah Negeri (MAN) is a school under the ministry of religion. Students at MAN have relatively the same level of academic ability. Every week students at MAN get 4 hours of chemistry lessons to face the national examination. The subjects in this study were class XII MIPA MAN 1 Sleman, XII MIPA MAN 3 Sleman, and XII MIPA MAN 4 Sleman in the academic year 2019/2020, which consisted of 238 students. The study was conducted in 9 classes; there are 3 MIPA classes at MAN 1 Sleman, 4 MIPA classes at MAN 3 Sleman, and 2 MIPA classes at MAN 4 Sleman. The time related to the study was taken from February 14 until March 11, 2019. The data on the research based on the student questionnaires regarding the interest in learning chemistry can be seen in Table 1.

Tabel 1. Student Interest Questionnaire Towards Chemistry Learning Major

Criteria	MAN 1 (%)	MAN 3 (%)	MAN 4 (%)	Total (%)	Category
Feeling Happy	69.3	66.8	67.5	67.8	Good
Involvement	78.8	72.0	78.6	75.9	Very Good
Interest	65.3	64.1	61.5	63.8	Good
Attention	82.2	77.9	76.4	78.8	Very Good
Learning Sources	81.3	76.0	70.6	76.3	Very Good
Learning Objectives	82.3	75.2	75.8	77.6	Very Good
Learning Media	81.0	80.8	73.8	79.0	Very Good
Material Understanding	86.0	79.5	81.8	82.1	Very Good
Importance in Learning	71.3	67.0	69.4	69.0	Good
The Application	63.0	59.2	65.9	62.2	Good
Pedagogical	66.2	66.4	65.7	66.2	Good
Social & psychological	71.5	72.8	72.7	72.4	Good
Juridical	61.8	57.4	61.3	59.8	Good

The Chemistry significant subjects in the National Examination is the least interested major, only reaching 14.3% (respondents). The existing policy to reduce the number of subjects naturally impacts the interest of students and the way of learning of students. For instance, the students who choose their interest in biology major tend to ignore chemistry and physics. The small number of chemical enthusiasts can be caused by several factors, which will be described as bellows.

a. Feeling Happy

Respondents showed a level of pleasure in learning chemistry by 67.8%—most students like chemistry when the material is related to practicum and their daily lives. One of the students in class XII said that chemicals are exciting and make us think more out of the box.

b. Student Involvement in the process

Respondents indicated that the level of involvement in the learning process was 75.59%. The participation of students in learning shows that students prefer to be directly involved in the learning

process, for example, practicum. One of the students in class XII stated that with practicum, students could better understand the material presented and more easily remember the material.

c. Student Interest

Respondents indicated that the level of interest in chemistry learning was 63.8%. The students' craft shows students' interest in chemistry in reading information related to chemistry or working on chemical problems. Supporting information gives students a greater understanding of chemistry and can apply it in everyday life.

d. Students Attention toward the Lesson

The level of attention from students toward chemistry is 78.8%. However, based on the interview results, some students who are not interested in chemistry tend to ignore or do not pay attention when the teacher is explaining the chemistry lessons material.

e. Learning Sources

Teachers' learning sources based on students' questionnaires were 76.3%, which means that they varied greatly. Usually teachers use more than one learning source to support students' understanding, which comes from books and the internet.

f. Learning objectives

Based on the student questionnaire obtained, the percent engagement of teachers in delivering learning objectives is 77.6%, which indicates an excellent result. The statement above means that the teacher still often conveys the purpose of the learning undertaken in every learning process. Because the existence of learning objectives can motivate students in learning, teachers can also find out the level of understanding of students after the material is given.

g. Learning Media

The percentage level of the use of learning media based on student questionnaire obtained 79%, which means excellent. Unwittingly engaging learning media can increase students' interest in learning.

h. Teacher Material Understanding

The percentage of Material Understanding level of the teacher is 82.1% which means very good. The result proves that the teacher has mastered the material being taught in the class in conveying learning.

i. The Importance of Chemistry

The level of student awareness of the importance of studying chemistry is over 69%, indicating a good achievement. This percentage shows that many students still ignore chemistry and assume that chemistry is not essential and is not related to daily life.

j. Application of Chemistry

The percentage of students applying the material taught is 62.2% which indicates a good achievement. The result means that only a few students can understand the importance of usability of chemistry learning in the classroom in practice. It can be caused by the lack of discussion about the direct application in daily life.

k. Pedagogical

Based on the student questionnaire pedagogical percentage of 64.8% indicates a good achievement. This outcome shows that most students are unsure of their abilities in the chosen specialization's significant subjects. There are even some students who choose random specialization major subjects; friends choose some.

l. Social and Psychological

Based on the student questionnaire, the social-psychological percentage was 72.0% which indicates a good achievement. The results mean that the support of parents and friends also influences the decision of specialization major of students. In addition, many things are also prepared by students to support the successful implementation of the National Examination.

m. Juridical

The percentage of juridical influence on the selection of specialization in the National Examination is 59.8%, indicating a good achievement. Based on that, the existence of various policies made by the government does not affect students' interests. They tend to follow existing policies.

Based on the discussion above about the factors that affect the low interest of students in choosing the chemistry primary specialization subject in the National Examination are divided into several causes. Several things can be done to increase students' interest in chemistry majors in general. First, the learning process in class should be done based on the learning objectives made. Learning

objectives can help teachers to know the level of ability of students and more directed learning. Second, the selection of learning methods also influences students' enthusiasm for learning. Generally, direct activities or practicums are preferred by students over memorizing theories. The existence of direct activities involving students makes it easier for students to understand the material presented. Third, the use of appropriate media in the learning process stimulates learners' knowledge. The existence of appropriate learning media can undoubtedly help students to understand the material being taught. Moreover, learning chemistry is generally about the abstract form of nature, so many students still find it challenging to learn chemistry. Therefore, problem solving-based in the chemistry learning process is more effective to trigger students' understanding. In addition, contextual learning can also be an option because it is closer to daily life. However, in some cases, such a learning process is still challenging to implement. According to the

The percentage of those interested in the National Chemical Examination for three years in a row is the lowest compared to the others. In 2019 chemical enthusiasts in 3 MAN Sleman schools were 14.5%; in 2018 17.4%; and in 2019 15.2%. The following data on the number of students can be seen in Table 2.

Table 2. Data is based on the number of students specializing in every significant lesson.

No	Years	Subject	MAN 1 (%)	MAN 3 (%)	MAN 4 (%)	Total (%)
1	2017	Physics	25.0	35.0	10.8	25.2
		Chemistry	11.7	15.3	15.1	14.5
		Biology	63.3	49.6	74.2	60.3
2	2018	Physics	14.5	30.4	4.6	19.7
		Chemistry	23.2	16.8	12.3	17.4
		Biology	62.3	52.8	83.1	62.9
3	2019	Physics	11.8	32.5	6.2	19.9
		Chemistry	15.3	17.5	10.8	15.2
		Biology	72.9	50.0	83.1	64.9

4. CONCLUSION

Based on the analysis, the difficulties experienced by students in learning chemistry are caused by several aspects: the abstract form of chemical material, complicated yet difficult concepts, and the obligation to memorize too much formula and concept. Chemistry is classified as an abstract concept because there is no concrete form of reaction between substances. Therefore the direct practice is needed. The student's low interest in chemistry subjects in the National Examination is influenced by several factors, including the student's aspects, teachers' aspects, material aspects, and the National Examination policy aspects. The percentage of chemistry subjects enthusiasts in the National Examination in MAN Sleman in 2019 was 15.2%, classified as the lowest amount compared to biology and physics majors. There is also central physics matter which is abstract but many counts so that students learn it more accessible. However, in general, student enthusiasm for learning chemistry, in general, is outstanding. Students realize that learning chemistry is essential for everyday life.

The study results were only limited to the accumulation of students' interest in chemistry subjects in the Senior High School National Examination. Therefore, the researcher hoped further researchers would be able to continue their research about the appropriate learning methods or instructional media development to increase students' interest in learning chemistry.

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