

Teacher and Student Perceptions Toward Practical Implementation Obstacles at Learning Chemistry

Descriptive studies in senior high school Kampar District Academic Year 2016/2017

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Abstract- This research focuses on the issue of implementation of the practical constraints faced by teachers and students in all schools in learning chemistry. The purpose of this research is to analyze the implementation constraints on learning of chemistry. This research uses a type of Descriptive research. Sampling techniques in the study using a Simple random Sampling technique. The research sample is 62 students and 6 teachers of chemical subjects out of 3 senior high school in Kampar Regency. Using data collection techniques of observation, interview and question form. The results of the observation and implementation of the practical constraints interview chemistry caused by laboratory facilities that do not meet the existing standards as well as the limitations of the time, tools and materials as well as a practical guide. The results now show the perception of chemistry teacher in senior high school Negeri Kampar on aspects of the implementation of practical, practical implementation and evaluation of motivation of making good report, perceptions of students on practical implementation aspects, motivation practical implementation and reporting criteria quite well. Based on the results of the study it can be concluded that the implementation of the teaching material of chemistry at senior high school at Kampar has fulfilled the criteria of good even though there are still some practical implementation constraints.

Keywords : *chemistry, perception of practical implementation, practical issues*

I. INTRODUCTION

Chemical occupies a central position among all the science subjects. This is a core subject for medical, Textile science, Agricultural sciences, synthetic industry, printing technology, Pharmaceutical, Chemical Technology [1]. Research evidence has proved that the chemical contribution to the quality of life and nation's large building in all aspects of human endeavor [2] [3].

Practical activities are very important in learning chemistry since chemistry is an experimental science that cannot be studied only through the read, write, or listen to it. Learn chemistry must be product and process. As the product is chemical concepts, theories, and laws while the chemical process is the IPA process skills can be acquired through practical work. Therefore, the study of chemistry is not enough to just include the cognitive aspect alone, but aspects of affective (attitude of scientific) and psychomotor aspects (performance) [4]. Practical work undertaken can improve students' knowledge, be it factual or procedural knowledge knowledge. Implementation of practical activities could not take place because of maximum 1) Limited materials and tools of chemistry due to difficult to obtain and costly the price of such goods. 2) Less availability of practical instructions that correspond to the tools and materials available. 3) The absence of a laboratory in high school chemistry labs and lack of practical guidance teachers write inability adapted to existing tools and materials [5].

Previous research explains that: (1) the completeness of laboratory facilities and infrastructure that exist in the new City District State high school in South Kalimantan, overall do not meet the minimum standards already set based on SNP only ranged from 67.5% to 90.75%; (2) the effectiveness of utilization of laboratory in learning chemistry as a whole are at a good category and more than 75% of learners have a value above the KKM means the laboratory utilized effectively; and (3) assessment of learners towards learning chemistry laboratory use are on the category very well [6]. On the other hand the results of earlier research explains that the intensity of the teachers who do practical work in the laboratory is still very low, this is because some of the issues and barriers experienced by teachers, namely: (1) the intensity of the teacher in the following training lab is still low, (2) the availability of teaching tool and materials are still less (3) the subject matter pretty solid IPA so teachers prefer methods lectures, (4) difficult to achieve learning objectives through practical work (5) required a special time for preparation before the practical work is carried out, (6) practical implementation time in hours of face to face is always insufficient, (7) understanding of the teacher against the concept of the use of teaching tools is still low, (8) teachers are difficult to design your own categorized, (9) is not the existence of the laboran which can help the implementation of practical IPA [7].

Based on the description, implementation of the activities of the chemical practical the ideal with the reality on the ground has not gone smoothly. Then the researchers presume that they the perception of obstacles facing teachers and students in the implementation of practical learning of chemistry. then do research "perceptions of teachers and students Towards Practical Implementation Constraints On Learning of chemistry"

II. METHODS

This research uses a type of Descriptive research. Descriptive research is describing about the whole phenomenon that occurs on the object of research. This research has been implemented in 3 senior high school in Kampar Regency. This research time in June-August 2016/2017 school year.

The population in this research is the entire chemistry students and teachers from a school at 3 senior high school Kampar. Sampling techniques in the study using a Simple random Sampling technique. The sample in this study was 62 students and 6 teachers of chemical subjects taken from 3 senior high school in Kampar Regency. The technique of data collection undertaken include (1) the now that is by way of spreading a number of written questions to the respondents, this is to Chemistry students and teachers, (2) Sheet Observasi, and (3) interview that is incomprehensible questions on ask to the head of school.

Measures of descriptive analysis of data in the research include (1) collect data as desired, (2) classify an answer from

the respondent, and (3) determine a large percentage of the respondents answer.

Steps descriptive analysis of data in the study include (1) to collect the desired data, (2) Classify answers of the respondents, and (3) determine the percentage of respondents.

III. RESULT AND DISCUSSION

A. Observations

Based on observations of researchers regarding the state of the building and laboratory facilities of the three high schools in Kampar, found that laboratory building chemistry and biology laboratory building are combined in one room. Chemical laboratories must meet the correct layout of the room so it could be ongoing lab work well [8]. The findings of the three high schools in Kampar not meet these standards can be seen from the layout window, fan, closet tools and materials that have not been in accordance with properly. Building Code and School Furniture senior high school also provides that the laboratory should be divided into parts, the first part is used as a preparation room and the second part is used for practicum.

Means of support contained in the chemistry laboratory such as lab tables, demo tables, chairs, cabinets Acid, disposal limbah lab practicum and safety security, based on observations of investigators to three high schools in Kampar do not meet the Building Code and furnishings from high school.

B. Interview result

- The interview is a step to strengthen the observation phase that has been done. At this research stage interviews were conducted with the principal as the highest party in oversight and decision-making of school activities. Here are some of the results of interviews with one of the principals:

- Whether at school the father was there facilities for chemical laboratories?

"The chemical laboratory, here we already had a chemical laboratory, but for the chemistry lab still incorporate the biology lab and a physics laboratory. This is due to the lack of special funds for our school chemistry lab "

What was the condition of chemical laboratory facilities, state of the equipment and materials in schools fathers?

- *"For our school chemistry lab facilities still incomplete, it can be seen from the laboratory supporting facilities like chairs that are still less by the number of students and not in accordance with existing standards"*

Are there any funds or special budget for care and the provision of tools and chemicals?

"At school our care funding and provision of tools and chemicals do not exist. But if teachers want to implement practical but the tool and the material is not available, then the teacher propose the necessary funds to carry out lab to

the school flag is removed from the general budget of the school "

Do you frequent monitoring of the activities in the school chemistry lab father?

"For monitoring all activities in school laboratories, has been given authority to the head of the laboratory, and if there are constraints on the implementation of a laboratory, then the head of the lab report to the principal"

Is the chemistry subject teachers never received training in the laboratory?

• "Never, but it's been so long. This is one of the problems that make teachers less motivated in practical implementation by the government due to lack of training for teachers about the laboratory "

C. Student Perceptions Questionnaire Results of Implementation Practicum

The next data collection process circulate a questionnaire about students' perception of the implementation of the chemistry lab to the students at each school. Questionnaire used in the form of a closed-type questionnaire, which includes aspects of implementation, motivation, and report generation.

The results of the questionnaire on the implementation aspects of the practicum can be seen in Chart 1. From the chart 1. The average yield on aspects of the implementation of the student's score on the practical implementation eligibility criteria quite well with the percentage of 50.83332%.

The questionnaire results to aspects of student motivation in carrying out practical work can be seen in chart 2. From the chart 2 showed average score on the implementation aspects of student motivation toward practical implementation that eligibility criteria are categorized quite well with the percentage of 55.74598%.

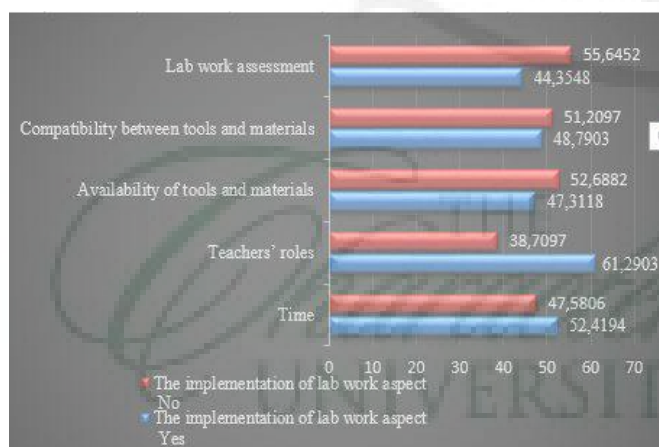


Chart 1. Results of student perceptions questionnaire on the implementation aspects of the practicum

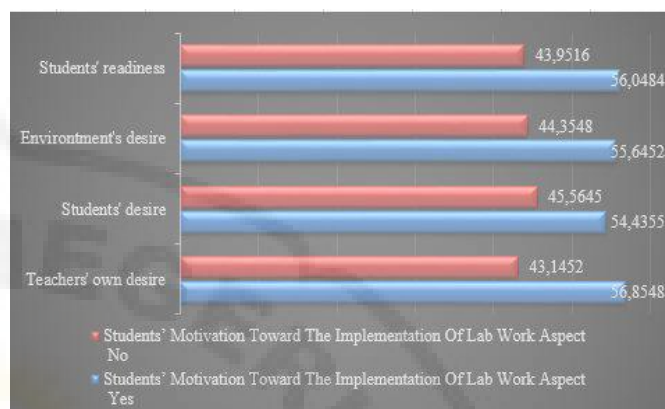


Chart 2. Results of student perceptions questionnaire on aspects of student motivation in carrying out practical

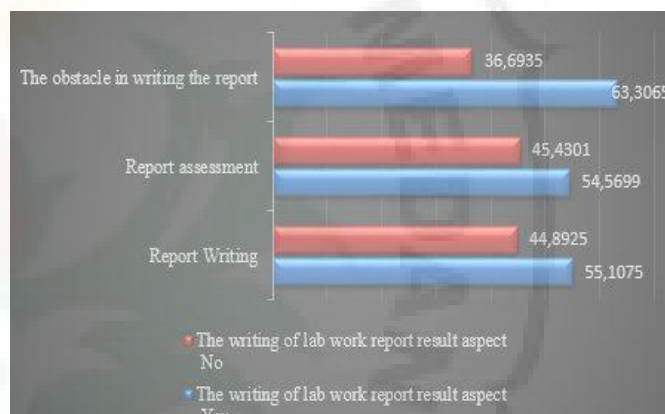


Chart 3. Results of student perceptions questionnaire In the aspect of making lab results report

In the aspect of report generation lab results can be seen in chart 3. From the chart 3. showed the average score on the aspect of making lab report criteria eligibility criteria quite well with the percentage of 57.6613%.

D. Perception Questionnaire Results of Implementation Practicum teacher

Determining the perception of the implementation process by requesting a school chemistry lab chemical subjects teacher responses yan g is represented by six people a chemistry teacher from three samples of high schools in Kampar. Type a questionnaire is used together with a questionnaire to students that the questionnaire enclosed type.

The results of the questionnaire on the implementation aspects of the practicum can be seen in Chart 4. From the chart 4. showed the average score on the implementation aspects of the implementation of practicum student eligibility criteria well with the percentage of 64.68254%.

The results of the questionnaire for teachers in implementing the motivational aspects of the practicum can be seen in chart 5. From the chart 5. showed the average score on the implementation aspects of teacher motivation towards the practical implementation eligibility criteria well with the percentage of 66.66667%. In the aspect of the evaluation report lab results can be seen in chart 6. From the

chart 6. The results indicate the average scores on the evaluation aspects of hail reports categorized eligibility criteria practicum well with the percentage of 65.83333%.

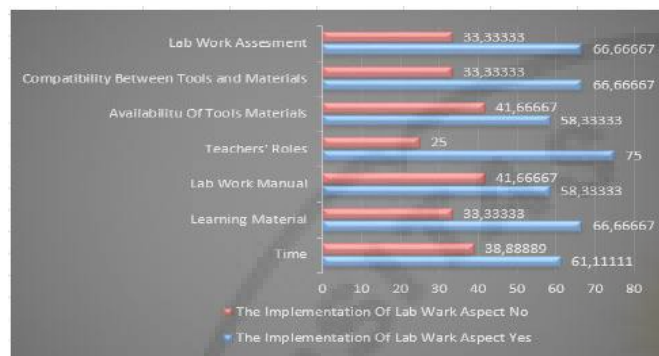


Chart 4. Results of teachers' perception questionnaire on the implementation aspects of the practicum

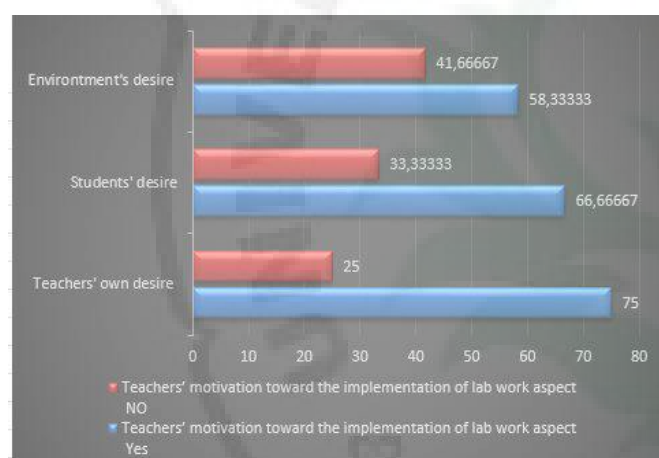


Chart 5. Results perception questionnaire on aspects of teacher motivation in performing lab

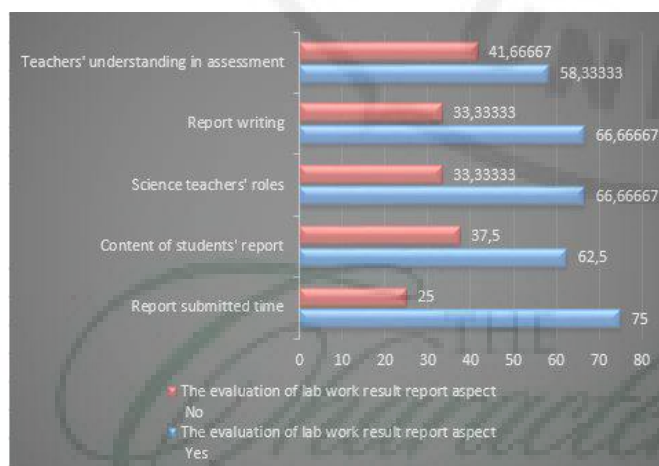


Chart 6. The questionnaire results on aspects of the evaluation report lab results

E. Discussion

Results of a survey conducted on three samples of high schools in Kampar own chemical laboratory, however chemistry labs rarely used for practicums caused because

laboratory chemical joined the physics laboratory and biological laboratories, as well as the most important issues is the question of Facilities and infrastructure in laboratory chemistry three samples have not been adequate in accordance with the Building Code and furnishings from high school.

Another limiting factor is not the course that led to chemistry lab so well as the availability of tools and materials as well as materials used are very dangerous to do lab work or the number of the necessary tools and materials are limited. Some solutions could be to do ffor overcome this obstacle as using instructional media such as broadcast video use lab or virtual lab system. Virtual laboratory is a learning environment where students convert their theoretical knowledge into practical knowledge by conducting experiments [9]. Virtual lab simulates a real laboratory and process environments. They provide students with meaningful experiences virtual and these important concepts, principles, and processes. By way of a virtual laboratory, students have the opportunity to repeat the experiment wrong or intended to deepen the experience. In addition, the interactive nature of teaching methods such as learning environment offers clear and pleasant [10] [11]. Virtual laboratory is a computer-based media which contain simulations of the activities in the chemical laboratory. Virtual laboratory created to describe the reactions may not be viewable on the real situation and also drew practical process that requires a high level of safety. The advantages in the use of virtual lab is students can gather data quickly in any situation, other than that the students can perform experiments with the actual experiment is safe to dangerous. The use of virtual labs are much cheaper when compared to experiments in real labs that require the tools and materials are relatively expensive. [12]. Additionally, some researchers have even found doing experiments in virtual environments is more effective than doing real experiments in the laboratory [13] [14] [15] [16]. The advantages in the use of virtual lab is students can gather data quickly in any situation, other than that the students can perform experiments with the actual experiment is safe to dangerous. The use of virtual labs are much cheaper when compared to experiments in real labs that require the tools and materials are relatively expensive. [12]. Additionally, some researchers have even found doing experiments in virtual environments is more effective than doing real experiments in the laboratory [13] [14] [15] [16]. The advantages in the use of virtual lab is students can gather data quickly in any situation, other than that the students can perform experiments with the actual experiment is safe to dangerous. The use of virtual labs are much cheaper when compared to experiments in real labs that require the tools and materials are relatively expensive. [12]. Additionally, some researchers have even found doing experiments in virtual environments is more effective than doing real experiments in the laboratory [13] [14] [15] [16]. The use of virtual labs are much cheaper when compared to experiments in real labs that require the tools and materials are relatively

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Problems tools and materials that do not correspond to the number of students can be addressed by teachers with practicum students divide into groups in accordance with the availability of tools and materials, develop Kit practice chemical or doing demonstrations method. The method can be applied as a substitute for demonstration experiments and practical methods in the classroom by using the principle of demonstration and pilot against a technique or the workings of a process [17].

Results of the questionnaire about the teacher's perception of a chemistry lab implements selected 6 samples of subjects chemistry teacher, that teacher having some problems in the conduct of school chemistry lab. As a guiding lab and worksheet students who are not in accordance with the laboratory conditions that are in school, many aspects should be observed teachers by the number of students who did little, time allocation is not enough to do practicum for all materials, as well as the character of students overactive resulting disturbed practical implementation process.

Some of the above constraints faced by teachers in school to carry out the lab can be overcome by creating an innovative chemistry lab guides refer curriculum developed in 2013 sets forth therein character students along with student work sheet. To cope with students who disrupt or cause trouble in the lab recommended to teachers to use when doing practical laboratory assistant.

Teacher's ability to carry out practical activities is influenced by several factors, including the teacher's perspective in understanding the basic applications laboratory, the type of school where teachers passed, the teacher is teaching, experience of teachers in teaching, school's physical condition and the condition of the evaluation and assessment of prevailing school [18]. Based on the results of questionnaires and interviews that school teachers lack an understanding of basic laboratory applications due to the lack of training for teachers about the laboratory.

The effectiveness of the implementation of practical activities in schools also influenced by the cultural background in which students come and student learning styles, so it is necessary to apply methods that can be implemented on the state of a diverse student culture [19]. This can be overcome provision of training and equipping the teachers are expected to regrow motivation of teachers to apply practical methods and invite students into the lab. A teacher requires understanding, skills and resources to help students interact intellectually and physically and is able to

improve the investigation and reflection. Further explained that, in order to improve the scientific attitude and understanding of laboratory for students affected by the expectations of teachers in teaching, assessment types are applied, the type of practical use, the form of worksheets, and tools sufficient talat media [20].

IV. CONCLUSION

The CONCLUSION to be drawn from this study is there are still many obstacles execution chemistry lab at school caused by the facilities and infrastructures laboratorium inadequate, tools and materials that do not exist or are incomplete, time allocation is not enough to do chemical lab for all materials chemicals present, the lack of preparedness of teachers and laboratory in dominate basic laboratory techniques that chemistry lab activity is not performing optimally.

Solutions or suggestions that can be done to reduce implementation constraints chemistry lab at the school is developing a handbook and chemistry lab kit in accordance with the materials and tools available in schools. To overcome the time is not enough to do lab work can be done lab demonstration or lab-based methods of virtual lab that is not fixated on real lab work that requires a relatively long time to do so. While that chemistry teacher and laboratory mastered the basic techniques of the laboratory can be overcome with training on laboratory-engineering techniques,

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