

Feasibility Level of Case Method-Based Chemistry Teaching Materials on Solution Material

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Abstract. The purpose of this study is to evaluate the feasibility of teaching materials for Chemistry, which are based on the Case Method on Solution Material and were created utilizing the 4-D Method (Define, Design, Develop and Disseminate). The results of the teaching feasibility were determined by two expert validators who were lecturers from the chemistry department, FMIPA, Universitas Negeri Medan. After collecting data using a feasibility questionnaire for teaching materials according to BSNP and then processing the data to obtain feasibility results in the form of percentages on 4 indicators of eligibility for teaching materials. In the content feasibility aspect, the feasibility aspect obtained a percentage of 94.6%, in the presentation feasibility aspect obtained 94.6%, in the language feasibility aspect obtained 96.9%, and in the graphical feasibility aspect, it obtained 93.3% where all these aspects fall into the very feasible category.

Keywords: Case Method, Feasibility, Higher Order Thinking Skill (HOTS)

1 Introduction

The world of work is currently very competitive. Education is an important aspect to be able to have the quality of competence required by a job vacancy. Many jobs require high professional skills in a particular field, such as teachers, lecturers, doctors, and other professions. Based on this, education is needed by students to be able to improve their competence so that in the end they can produce graduates who are competitive in the world of work. The educational process can be carried out in a directed manner by looking at the basic competency needs of students [1]. The competencies needed by students today include students' high-level thinking abilities which include the ability to think critically, be able to solve the problems they face, and be creative and innovative. The creation of teaching materials that incorporate Higher Order Thinking Skill (HOTS) questions and suitable

learning models to create high-quality teaching materials that students can use is one of the supporting factors in enhancing high-level thinking abilities [2].

The high-level thinking abilities possessed by students will encourage them to think more logically, critically, creatively, and innovatively. The ability to think like this will make students more qualified to carry out any work or activity because students will be able to communicate and collaborate well [3]. Students' high-level thinking abilities can be supported by using teaching materials containing Higher Order Thinking Skill (HOTS) questions so that students are accustomed to dealing with Higher Order Thinking Skill (HOTS) problems or questions that require longer reasoning at a cognitive level. minimum C4 (Analysis). Apart from that, this high level of ability also needs to be supported by appropriate learning methods so it is very appropriate to combine it with the Case Method [4]. The Case Method aims to direct students in analyzing cases or problems to be solved collaboratively so that the learning process will bring out students' high-level thinking abilities [5].

The Case Method-based Higher Order Thinking Skill (HOTS) chemistry teaching materials used in the lecture process are still rare, according to the author's observations of the lecture process on solution material in general chemistry courses. Students typically use instructional materials that are not integrated with the Case Method and do not include questions requiring Higher Order Thinking Skills (HOTS). As a result, more Higher Order Thinking Skill (HOTS) chemistry teaching resources that incorporate the Case Method are still required.

According to previous research that has been carried out, the application of the Higher Order Thinking Skill (HOTS) method in the learning process can improve the ability to analyze, evaluate, and create new, useful things [6]. Likewise, other research also found that the case method applied to students' learning process was able to improve students' abilities in analyzing and solving the problems they faced [7]. Therefore, the combination of Higher Order Thinking Skill (HOTS) and Case Method content in one teaching material will be able to improve students' high-level thinking abilities.

The application of chemistry is widely used for the needs of human life both in the fields of health, and industry and in other fields of life. One of the chemicals that is widely applied in life is solution chemistry. Solutions are closely related to human life. Examples of solutions are drinks that are often consumed by humans such as syrup, sweet tea, and other drinks. These facts about the application of chemistry in human life are a starting point for students to be able to think at a high level regarding solution material in general chemistry courses so that students can apply chemical concepts, analyze, and create something new that is useful for living creatures. life. Consequently, in order to help students enhance their higher order thinking skills, it is crucial to develop Higher Order Thinking Skills (HOTS) in Chemistry teaching materials that are based on the Case Method on solution material.

Chemistry teaching materials based on the case method that has been developed need to be tested for feasibility so that they can be used and are effectively used by students. Therefore, it is very important to conduct research regarding the suitability of these teaching materials so that researchers consider it necessary to conduct research related to "Feasibility Level of Case Method-Based Chemistry Teaching Materials on Solution Material".

2 Methods

Before the feasibility analysis was carried out, Higher Order Thinking Skill (HOTS) chemistry teaching materials based on the Case Method had been developed. Teaching materials that have been developed using the 4D method then produce products in the form of teaching materials [8]. Development research is also a process for developing new products or improving existing products [9]. The 4-D development model consists of four stages, namely defining, designing, developing, and deploying [10]. After that, the product that has been developed is then validated by two expert validators in the field of learning media using a non-test instrument in the form of a questionnaire. The questionnaire used for validation contains several important aspects that are in accordance with BSNP, namely aspects of content, presentation, language, and graphic appropriateness.

3 Results and Discussion

Higher Order Thinking Skill (HOTS) chemistry teaching materials based on Case Method on Solution Material that have been developed were validated by two chemistry education lecturers at Medan State University as expert validators in the field of learning media. Expert validators validate teaching material products to determine the feasibility level of the teaching material product and obtain the following results.

Aspect of Content Feasibility

Validation results on the content feasibility aspect of the developed teaching materials obtained feasibility results which were included in the very good category with a percentage level of 94.6%. The results of this feasibility data can be seen clearly in Figure 1 as follows.

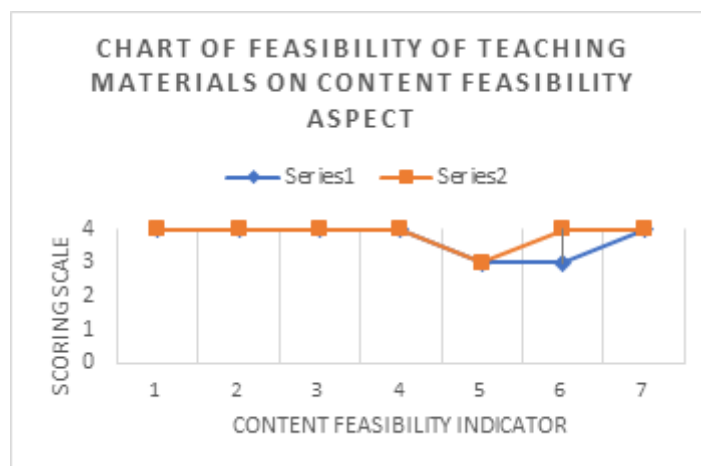


Figure 1. Feasibility of Teaching Materials in the Aspect of Content Eligibility

Based on the results of these data, it can be seen that the 7 indicators in the aspect of content suitability have a value close to 4 on a scale which is a very good criterion. This is seen from

the suitability of learning outcomes and objectives with the content of the teaching materials being developed as well as the accuracy and up-to-dates of the material explained in the teaching materials. Apart from that, in indicators 5 and 6 it is hoped that there will be improvements related to images or illustrations contained in teaching materials so that they take and use the latest or modern sources.

Aspects of Feasibility of Presentation

The validation results on the feasibility aspect of presenting the teaching materials that have been developed have obtained feasibility results which are included in the very good category with a percentage level of 94.6%. The results of this feasibility data can be seen clearly in Figure 2 as follows.

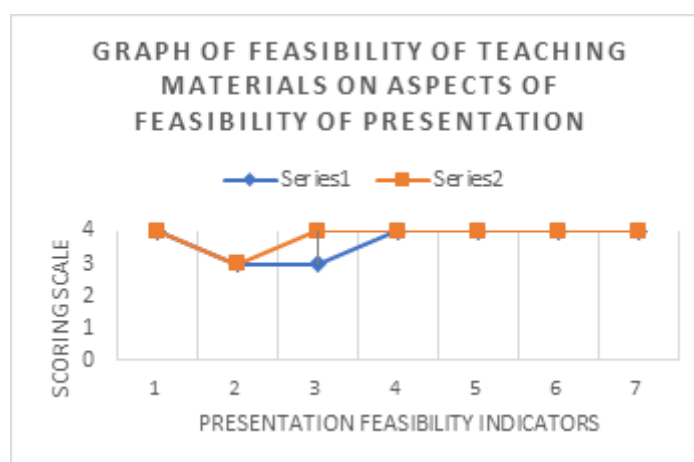


Figure 2. Feasibility of Teaching Materials in the Aspect of Feasibility of Presentation

Based on the results of these data, it can be seen that the 7 indicators in the presentation feasibility aspect have a value close to 4 on a scale which is a very good criterion. Based on this data, it can also be explained that the systematic technique of presenting material supported by examples of HOTS questions and HOTS practice questions and integrated with *the Case Method* is very good. Indicators 2 and 3 require additions and improvements regarding example questions and HOTS practice questions in the teaching materials.

Aspects of Language Feasibility

Validation results on the language feasibility aspect of the teaching materials that have been developed obtained feasibility results that fall into the very good category with a percentage level of 96.9%. The results of this feasibility data can be seen clearly in Figure 3 as follows.

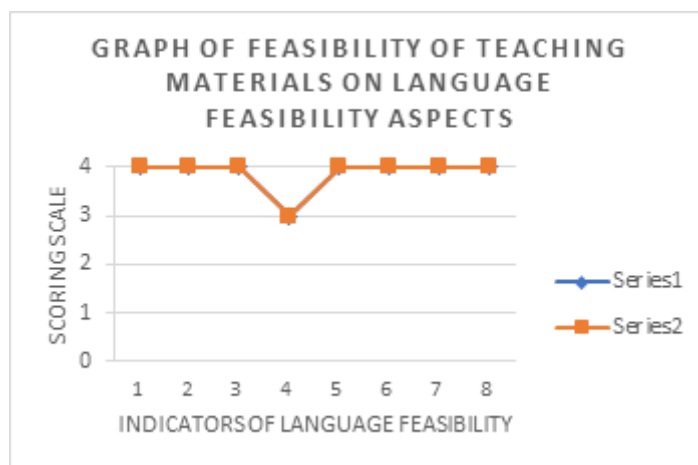


Figure 3. Feasibility of Teaching Materials in the Aspect of Language Feasibility

In the data contained in Figure 3, it can be seen that the 8 indicators in the language suitability aspect obtained a consistent average score close to the maximum scale of 4. This aspect looks at the use of accuracy and effectiveness of sentence structures that are very well presented in the teaching materials being developed. In indicator 4, there needs to be additional something that creates interaction in the teaching materials being developed and can motivate readers to better understand the material presented.

Aspect of Graphic Feasibility

Validation results on the graphic feasibility aspect of the teaching materials that have been developed obtained feasibility results that fall into the very good category with a percentage level of 93.3%. The results of this feasibility data can be seen clearly in Figure 4 as follows.

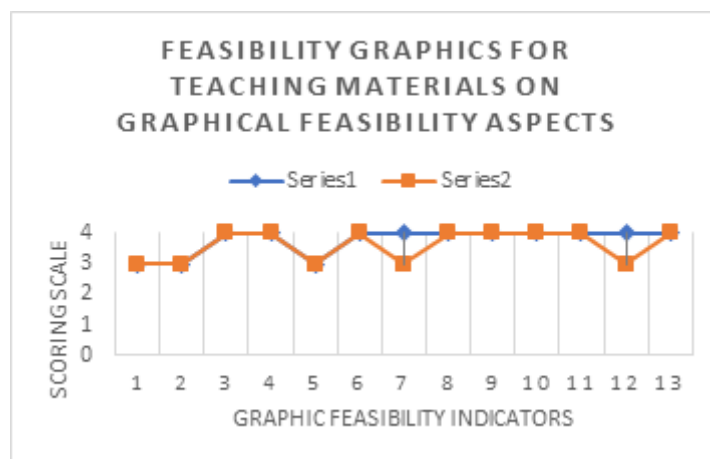


Figure 4. Feasibility of Teaching Materials on Graphic Feasibility Aspects

In the data contained in Figure 4, there are 13 indicators in the aspect of graphic appropriateness which obtain a consistent average value close to the maximum scale of 4. This aspect is reviewed based on the harmony between the appearance of the front cover, contents and back cover, the appearance of illustrations, and typography. appropriate to use in the teaching materials that have been developed. In some indicators, there is still a need for slight improvements in the teaching materials being developed so that graphic feasibility becomes better. Overall the suitability of the graphics is very good.

4 Conclusion

Based on the results and discussions that have been presented and explained, the conclusions obtained are the feasibility of teaching materials in terms of the four aspects of feasibility, the average percentage of all aspects of feasibility is obtained, the percentage is 94.9% with the feasibility category being very feasible. In the content suitability aspect, the percentage of suitability was 94.6%, in the presentation suitability aspect it was 94.6%, in the language suitability aspect it was 96.9%, and in the graphics suitability aspect, it was 93.3%, where all these aspects fall into the category very good.

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