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FEASIBILITY OF SWBSEA APPLICATION IN LEARNING AT ISTIQLAL SENIOR HIGH SCHOOL

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ABSTRACT

Practical methods are very rarely used in learning physics so that Students have difficulty understanding concepts. Student Worksheets are needed to support practical work. Student Worksheets used in learning are not feasible. Fulfillment of the feasibility test in learning in this study is intended to test and determine the level of feasibility of Student Worksheets Based on the Starter Experiment Approach (SWBSEA). The design of the SWBSEA is based on curriculum needs, Student knowledge, and Student skills. Testing the level of feasibility and application of SWBSEA is given to Students during learning and submits a questionnaire to assess the feasibility of use. The results showed that SWBSEA in Physics learning was considered feasible in terms of Content Display, Subject Display, Component Completeness, and Grammar.

Keywords: feasibility, SWBSEA, Practical methods

INTRODUCTION

One of the causes of low Student achievement especially in Physics subjects is misconception. Misconceptions arise because each Physics concept must be mastered correctly before learning other concepts. Students tend to resort to concepts rather than applying concepts. Teachers play a role in the learning process and Students act as Students. In the process, the teacher uses textbooks and worksheets as one of the learning resources and presents them to Students.

Teaching is the main task of an Educator (Teacher, Lecturer, Tutor, Instructor, Widyaiswara). Creative educators will always create ideas in designing new learning systems that are able to make Students achieve their learning goals with satisfaction. To obtain a new learning system, a method of research and development of the learning system is needed. The method of developing a learning system is not much different from other product development methods. The development procedure is shorter because the result is not too risky and the impact of the system is limited to Students who are targeted.

Based on the results of preliminary observations about the worksheet used by Students, it is known that the worksheet used has not applied the K13 component completely. the worksheet contains a collection of questions which are then used as teachers as assignments / homework for Students. Students are only required to work on the practice questions in the worksheet, without first understanding.

In addition, existing worksheets are not based on the Starter Experiment Approach (SEA). SEA is a comprehensive approach to science teaching (Physics, Biology, Chemistry) which usually includes a variety of learning strategies and is

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applied separately and often without a plan. Understanding without plan here means that the teacher is still looking for the dominant knowledge of the dominant Student to make the topic of discussion in class.

Learning with SEA trains Students to be active by following the stages of learning which in turn can improve the quality of learning. Each main step has a definite goal and is focused on the development of the child's learning process. In the SEA there are at least three elements needed in the process of changing concepts, namely: 1) Identification of Students' preconceptions which are still in the form of misconceptions; 2) Improve misconceptions into scientific conception through testing experiments; and 3) Application of concepts with situations that are close to Student's life.

Worksheets are generally purchased and not self-made and can be far more interesting and contextual according to the situation and conditions of the school or the Students' social and cultural environment (Prastowo, 2014). Learning devices in the form of worksheets are chosen so that active Students are used as instructions and guidelines for Students in experimenting. Worksheets are Student guides that are commonly used in observation, experimentation, and demonstration activities to facilitate the investigation process or solve a problem (Trianto, 2011).

Worksheets are sheets containing tasks that must be done by Students (Majid, 2007). Teaching materials are called appropriate if they fulfill the feasibility of content, language, and presentation. This is in accordance with Government Regulation No. 19/2005 article 43 paragraph (5) which states that, "Feasibility of the contents, language, presentation, and graphics of textbooks is assessed by the BSNP and determined by Ministerial Regulations" (Lestari, 2013).

Arsyad (2012) some suggested the advantages of worksheets, among others: a) Students can learn and progress according to their respective speeds so that Students are expected to master the subject matter. b) Can repeat material in printed media, Students will follow logical order logically. c) Enables a combination of text and images that can add attraction, and can facilitate understanding of the information presented. d) Especially for programmed text, Students will actively participate because they have to respond to questions and exercises. e) Material can be reproduced economically and easily distributed.

The benefits of using worksheets for learning activities according to Prastowo (2011) are: a) Enabling Students in the learning process. b) Helping Students to develop concepts. c) Train Students in finding and developing process skills. d) Train Students to solve problems and think critically. e) As a guide for teachers and Students in carrying out the learning process. f) Helping Students get notes about the material learned through learning activities. g) Helping Students add information about concepts learned through systematic learning activities.

The development of the education curriculum in Indonesia continues to improve. Starting from the KTSP curriculum, K-13, to K-13 revision 2018. Istiqlal Senior High School still uses K-13. Physics learning in the material of Elasticity and Hooke's Law was made based on KD 3.2 and 4.2 of the 2013 curriculum, namely; 3.2 Analyze properties of elasticity of material in daily life, and 4.2 Conduct experiments on the elasticity of a material along with the presentation of the results of experiments and their utilization.

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METHODS

SWBSEA is made based on the needs of Students on the basis of the K-13 curriculum. The use of SWBSEA as a learning media for Students to support practical activities can simultaneously measure psychomotor aspects in Students. The SWBSEA made was tested to Students, then Students were given a questionnaire to assess the feasibility of SWBSEA. SWBSEA testing was conducted on students using small groups (2 groups with a total of 13 students) and large groups (5 groups with a total of 32 students). The instrument used is the SWBSEA assessment sheet which includes aspects of Content Display, Subject Display, Component Completeness, and Grammar. Data were analyzed descriptively qualitatively. The assessment instrument for SWBSEA used a Likert scale ranging from 1-4. Assessment results are carried out by calculating the percentage score.

Table 1. Likert Scale for Assessment

No	Optional	Score
1	Very good	4
2	Well	3
3	Not good	2
4	Worst	1

The percentage score obtained is then measured using the interpretation of scores for the Likert Scale, as follows Table 2.

Table 2. Interpretation of the Likert Scale

Interval	Criteria	Qualification
80,01%≤ x100,00%	Very Worthy	products are ready to be used on the actual field for learning activities / there is no revision
60,01%≤ $x \leq$ 80,00%	Feasible	products are ready to be used on the actual field for learning activities but there is a minor revision
40,01%≤ $x \leq$ 60,00%	Enough	products can be continued by adding something that is lacking, doing certain considerations, the additions for revision
20,01%≤ $x \leq$ 40,00%	Not feasible	Mayor Revise by carefully reexamining and looking for weaknesses to improve product
0%≤ $x \leq$ 20,00%	Very inappropriate	The product failed, revised massively and fundamentally about the contents of the product

(Sari, 2016)

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RESULT & DISCUSSION

The SWBSA design material of Elasticity and Hooke's Law was made based on KD 3.2 and 4.2 curriculum 2013. The worksheet trial was conducted on material experts (lecturers), material experts (lecturers), design experts (lecturers). Material experts are given a questionnaire to assess worksheets. Recapitulation of questionnaire evaluation data for material experts is as follows:

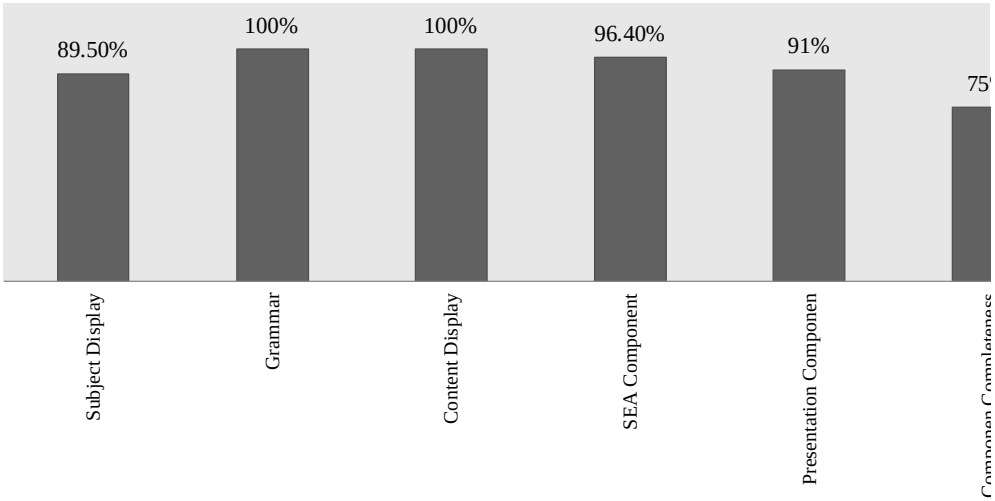

Figure 1. Feasibility Test Diagram

Based on the results of the evaluation of material experts obtained an average of all aspects of the indicator which is 91.07% with very decent interpretation. This shows that SWBSA can be used for Teachers and Students.

In the first activity, the material expert was validated by providing a worksheet in the form of a prototype and worksheet assessment questionnaire. The questionnaire consists of two indicators, namely the feasibility of presenting material and language, the questionnaire consists of 14 descriptors with a range of scores 1-4. The assessment of the material experts on the feasibility indicator for the presentation of the material obtained a score of 89.50% with very feasible criteria and the linguistic indicator obtained an assessment of 100% with very feasible criteria. On the feasibility aspect of presenting worksheet material, it was improved in the first activity, the revisions made were improvements to the illustrations, drawings, and concepts in the activity.

In the second activity validation was done to the learning expert by providing a worksheet in the form of a prototype and worksheet assessment questionnaire. The questionnaire consists of two indicators, namely the feasibility of the contents and components of the SEA, the questionnaire consists of 11 descriptors with a range of scores 1-4. The assessment of learning experts on the indicator of content eligibility obtained a score of 100% with very feasible criteria and the SEA component indicator obtained a score of 96. 40% with very feasible criteria. The improvement in this validation is by improving the explanatory sentence in each SEA step starting with the starter, observation, problem formulation, hypothesis, testing experiment, drafting, and applying the concept.

In the third activity validation was carried out by the design experts by providing a worksheet in the form of a prototype and worksheet assessment

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questionnaire. The questionnaire consists of two indicators, namely the component of presentation and completeness of the components, the questionnaire consists of 10 descriptors with a range of scores 1-4. The assessment of learning experts on the components of the presentation indicator obtained a value of 91% with very feasible criteria and the completeness indicator of the component obtained a value of 75% with the criteria feasible. Improvements to this validation are paying attention to the consistency of typing, adjusting instructions to images on the worksheet, and correcting images on the worksheet cover that must be adapted to the material.

The feasibility of the worksheet is theoretically assessed based on the average aspects that have been determined, namely the feasibility of the content, the feasibility of presenting the material, the language, the completeness of the components, and the completeness of the components. This aspect is a description of good worksheet requirements according to Trianto (2010), namely didactic requirements (content) and construction requirements (language), while the last condition is technical requirements (writing, description, and appearance).

The feasibility aspect of the contents of SWBSA is declared very feasible. All sub-components of content feasibility are conformity of material with KI and KD as well as requirements for the preparation of good learning resources. In compiling learning resources need to pay attention to the curriculum (Kariem, 2013).

Worksheets developed are arranged based on good worksheet preparation conditions, besides that worksheets are also arranged according to the Ministry of National Education (2004) which begins with analyzing the curriculum, arranging worksheet needs maps, determining the worksheet title to be developed, and then starting writing worksheets.

This can be seen from the worksheet material that contains the truth of facts, concepts, principles and procedures, based on concepts and theories that apply in the field of physics. Thus the worksheet material can be accounted for scientifically, correctly, and scientifically. The theory and concept of material and activities in this worksheet were obtained from several existing textbooks and textbooks. Therefore, the appropriateness of the contents of the material in the developed worksheet can be used as learning material. Feasibility of presentation is included in the category of very feasible. This shows that the worksheet has been written in the appropriate order and interconnected, and assisted with the use of good language.

The system of writing in a worksheet is considered very good because the worksheet is presented in a coherent and coherent way of thinking, the relationship between sentences, paragraphs and good concepts. In addition, the worksheet material is easy for Students to understand because the language used in the worksheet is clear and does not cause double meaning. Trianto (2010) states that the language used in composing sentences on a worksheet must be clear, simple, and in accordance with the Students' abilities.

The appearance of the worksheet is considered attractive for Students because it is designed to look good and not excessive, containing new things about Elasticity and Hooke's Law. The appearance is very important in the worksheet, because Students will be interested in the appearance of the worksheet before reading the contents (Trianto, 2010). The presentation of the components and the

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completeness of the components included in the criteria is very feasible. The high value is because the worksheet is presented in full. The title in the worksheet is adjusted to the material. This is in accordance with Prastowo (2012) which states that the title must be in accordance with the KD or subject matter that must be achieved by the Student.

The worksheet also contains the Student identity column; assessment column; and main components such as table of contents, instructions for using worksheets, introductory subject, supporting info, activity sheets, bibliography. Worksheets also provide enough space to give Students the freedom to write answers or draw on worksheets. This is in accordance with Prastowo (2011); Depdiknas (2004) requirements that the structure of worksheets in general contains at least the title, basic competencies to be achieved, time needed to complete, equipment or materials needed to complete tasks, brief explanations, work steps, tasks that must be done, and reports that must be done.

SWBSA in the criteria is very feasible because it contains the steps of SEA through the activities of ignition (starter), observation, formulation of problems, hypotheses, testing experiments, drafting concepts, application of concepts and communicating the concepts they find through activities in SWBSA.

CONCLUSION

The level of feasibility of SWBSA on physics learning which is viewed from the feasible in terms of Content Display, Subject Display, Component Completeness, and Grammar obtained an average value of 91.9% with very feasible criteria. As a follow-up it is suggested as follows: (1) Further research on more and broader samples with non-treatable factors such as nurturant effect in learning, (2) Tested on a wider sample group, so that it can be seen whether developed worksheet has a significant effect on learning outcomes and mediates misconceptions so that dissemination can be carried out.

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