The Development of English Teaching Material Based on the Higher Order Thinking Skills (HOTS) at Sailing Vocational High School

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Abstract— The aim of this research and development was: (1) Produce a proper English teaching material based on the HOTS which was used by the students; (2) Finding out the effectiveness of the implementation results of English teaching material based on the HOTS which was used by the students. This study belongs to a research and development which used the R&D model by Borg and Gall which combined by instructional design of Dick and Carey. The result of the validation by Expert and trial process shows that the developed English teaching material was in the very good category and the English teaching material was proper to use. In the phase of effectiveness testing with quasi experimental method. The hypothesis result showed by the data obtained t count = 2.33 and ttable = 1.68. This was obtained that t count > ttabel, it means that was significant differences between the students which were taught with English teaching material based on the HOTS and the students which were taught with a text books. So,it could be concluded that English teaching material based on the HOTS is proper and effective used in learning.

Keywords— english teching material; higher order thinking skills (HOTS)

I. INTRODUCTION

Mastery English in the middle level, especially to the vocational students were very emphasized that produce the fresh graduate to be the individual who was ready and able to compete in the global era.Therefore, learning English in the vocational education should be oriented in the mastery language aspects and the ability in comunication that was used as a capital in a working world. In other word, English subject in the vocational education was intended to form the graduate from vocational education who was ready to fill all the jobs opportunities in the global market. As a respond to the industrial challenge 4.0, that vocational education was a different education from the variety of another educations, should has the characteristics as followed: (1) oriented to the individual performance in the working period; (2) specific justification to the real needed in the field; (3) the curriculum was focus on the psychomotor, affective and cognitive aspects; (4) the benchmark of the success was not limited in the school; (5) have a sensitivity to the development of jobs

opportunities; (6) needed facilities and infrastructure adequately; dan (7) support from the community. Vocational and training educations have the same intended in developing the knowledge, ability, performance and competency establishment in individual. Vocational education was focused on the labor provision in the various sectors such as industrial, agriculture, and technology to improve the economic development.

The National Education Standards Agency (BSNP) was an independent, professional and independent institution that had a mission to develop, monitor implementation, and evaluate the implementation of the national education system. One of the tasks of BSNP was to have the authority to assess the appropriateness of content, language, presentation and graphic textbooks. The standards developed by BSNP were effective and binding on all education units (BSNP 2009). In exercising the authority to assess the feasibility of teaching materials, BSNP had issued in several criteria as an evaluation standard. The standards issued by the BSNP were used as a general reference for evaluating teaching materials.

One of the main focuses of 21st Century thinking skills in achieving learning goals was Higher Order Thinking Skills (HOTS) (Saido, et al., 2015: 13). Thinking skills were very important because it was one of the content to be achieved in the learning process in addition to other skills such as communication skills, social skills, and skills in globalized social life. Referring to the explanation above, English teaching materials developed for students in particular vocational educations should emphasize the empowerment of HOTS not only in remembering and memorizing.

According to Widodo and Kadarwati (2013: 162) with high order thinking, students would be able to distinguish ideas or ideas clearly, to argue well, be able to solve problems, be able constructing explanations, being able to hypothesize and understanding complex matters more clearly.

So, the formulation of the problems in this research and development are: (1) Were the English language teaching materials based on Higher Order Thinking Skills (HOTS) developed suitable for use by class X students of Sailing Vocational Schools? (2) Are the English teaching materials

based on Higher Order Thinking Skills (HOTS) developed more effectively than using textbooks in class X students of Sailing Vocational Schools?

II. RESEARCH METHOD

This research was conducted at the Hang Tuah Vocational School in Medan, located at Jalan KL Yos Sudarso Km. 11.5 Medan City. The study was conducted on students in uneven semester 2018/2019 academic year.

This study used research and development models (Reasearch and Development) from Borg and Gall combined with instructional designs from Dick and Carey.

To produce this Product in this development would be carried out through the following steps:

1) *The first step was to determine the test objectives*: namely learning design experts, material experts, and media experts. Inputs expected from each expert were data on media design, aspects of learning and truth as well as accuracy of product content developed to obtain input from aspects of display quality, presentation of material, usefulness, convenience and attractiveness of products. Then it would be analyzed and concluded as a basis for making improvements to the product (revision I).

2) *The second step was individual trial:* Products and questionnaires would be given individually in order to determine the validity of the product after being examined and given advice by experts. Input from trial II would be used as a basis for product improvements (revision II).

3) *The third step was small group trials:* In this step the product and questionnaire would be given to small groups taken randomly from students whose purpose was to get advice and input from small groups about the feasibility of the product. Input from trial III was used as the basis for product improvements (revision III).

4) *The fourth step was limited field group trials:* This trial was conducted to find out whether there were still deficiencies that need to be corrected from the product developed after discussion, both based on expert review and on individual and small group trials. If there were still deficiencies, based on the input obtained, improvements would be made (revision IV). If not, then the product could be declared eligible and the product was revised was declared valid and could be used for testing the effectiveness of the product.

The data collected in this study were descriptive qualitative and the instruments used were questionnaire, interview and observation sheets. The trials in this study were conducted by giving a questionnaire. Questionnaire was given to find out the feasibility of teaching materials developed. The questionnaire was made by using1-4 Likert Scale Type with criteria as the following table 1:

TABLE 1. QUESTIONNAIRE

No	Answer	Score
1	Excellent	4
2	Good	3
3	Good Enough	2
4	Bad	1

The obtaining a percentage of data from the results of the questionnaire assessment were analyzed using the formula below:

$$X = \frac{R}{N} \times 100\% \tag{1}$$

Where:

X: The value sought
R: The total score of the item / question correct answer
N: The maximum score from the test

The score classification was converted into a classification in the form of a percentage (Sugiyono, 2011). Determination of the criteria for the level of eligibility of teaching material products developed was presented in table 2:

TABLE II. PRODUCT ELIGIBILITY LEVEL CRITERIA

No	Criteria	Percentage (%)		
1	Excellent	81%	x	100%
2	Good	61%	x	80%
3	Good Enough	41%	x	60%
4	Bad	0%	x	40%

Meanwhile, to see the effectiveness of the teaching material developed, the following steps were carried out:
1) Tabulate student learning test results
2) Finding the average value, standard deviation, variance, median, mode, and make a frequency distribution of student learning outcomes data at a significance level of 5%.
3) Test for normality
4) Homogeneity test
5) Hypothesis testing
   Ho: $\mu 1 = \mu 2$
   Ha: $\mu 1 > \mu 2$

Information:

$\mu 1 =$ average student learning outcomes taught using HOTS based English teaching materials.

$\mu 2 =$ average student learning outcomes taught using textbooks.

Ho = There was no difference in student learning outcomes taught by HOTS based English teaching materials with student learning outcomes taught using textbooks.

Ha = There was a difference in student learning outcomes taught by HOTS based English teaching materials with student learning outcomes taught using textbooks.

To test the hypothesis this study was conducted using the t-test formula:

$$t = \frac{\overline{X}_1 - \overline{X}_2}{s\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \quad (2)$$

Where S was the combined root variance calculated by the formula:

$$s^2 = \frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2} \quad (3)$$

where $s = \sqrt{s^2}$

To see the value of the effectiveness of the instructional media being experimented by using the following formula for calculating effectiveness (Sugiyono, 2011):

$$X = \frac{total\ score\ obtained}{total\ score\ for\ all\ items} \times 100\% \quad (4)$$

III. RESULT AND DISCUSSION

A. Product Development Research Results

1) Description of Test Result Data: The following summarizes the average percentage of the results of assessment of English teaching materials based on Higher Order Thinking Skills (HOTS) by material experts, media experts, design experts, individual trials, small group trials, and field trials could be seen in table:

TABLE 3. THE RESULT OF ASSESSMENT

No	Respondent	Average %	Criteria
1	The Expert of Learning Materials	95,34%	Excellent
2	The Expert of Learning Media	93,69%	Excellent
3	The Expert of Learning Design	95%	Excellent
4	Individual Trial	94,81%	Excellent
5	Small Group Trials	96,10%	Excellent
6	Field Trial	99,52%	Excellent
	Average	**95,74%**	Excellent

B. Product Effectiveness Test Results

1) Data on learning outcomes of students taught using English teaching material based on HOTS: Data obtained from the results of the posttest students who are taught using English teaching materials based on HOTS at Medan's Hang Tuah Vocational School, the lowest score was 70 and the highest score was 93. The average score is 81.13 mode 81.58, median 81.25 and standard deviation 5.57.

2) Student Learning Outcomes Data were taught by using textbooks: The results of giving posttest to students who were taught using textbooks obtained the lowest score of 70 and the highest score of 87. The average score of 77.14 mode 77.75 and a median of 77.25.

3) Product Effectiveness Hypothesis Testing: To test the effectiveness of teaching materials, it is taken through the test of the difference in average student learning outcomes in the experimental class and student learning outcomes in the control class.

Research hypotheses to be tested are:
Ho: $\mu_1 = \mu_2$
Ha: $\mu_1 > \mu_2$
Information:
μ_1 = average student learning outcomes taught using English teaching material based on HOTS
μ_2 = average student learning outcomes taught using textbooks.
Ho = there is no difference in student learning outcomes taught by English teaching material based on HOTS outcomes taught using textbooks.
Ha = There is a difference in student learning outcomes taught by English teaching material based on HOTS with student learning outcomes taught using textbooks.

Based on the calculation results obtained tcount = 2.33 and t table = 1.68, so tcount> t table at a significance level of of 0.05. Based on these results, then Ho is rejected and Ha is accepted or in other words there is a significant difference between student learning outcomes in the experimental class and the control class at the 5% significance level. Thus, student learning outcomes that are taught with English teaching material based on HOTS have differences with student learning outcomes that are learned with textbooks. To see the percentage of effectiveness of English teaching material based on HOTS that developed, the following calculations are made:

$$\bar{x} = \frac{total\ score\ obtained}{total\ score\ for\ all\ items} \times 100\%$$
$$\bar{x} = \frac{1854}{2300} \times 100\% = 81,13\%$$

The value of the effectiveness of teaching materials in the form of textbooks can be seen in the following calculations:

$$\bar{x} = \frac{total\ score\ obtained}{total\ score\ for\ all\ items} \times 100\%$$
$$\bar{x} = \frac{1614}{2100} \times 100\%$$
$$\bar{x} = 77,14\%$$

Based on the calculation of the effectiveness test on the two learning media, the results are obtained that the learning outcomes of students who are taught with English teaching materials based on HOTS are higher than the learning outcomes of students who are taught by textbooks (81.13%> 77.14%). Thus it can be concluded that English teaching materials based on HOTS are more effectively used in learning in class X students of Sailing Vocational Schools compared to using textbooks as usual.

IV. CONCLUSION

Based on the formulation, objectives, results and discussion of research development of HOTS-based English language teaching material previously stated, it could be concluded as followed:

- HOTS-based English teaching material products developed for students of class X SMK Tailing Hang Tuah Medan were eligible and were very suitable to be used as learning books. The results of this study

indicate that: (1) expert test of English subject matter was in the very good category (95.34%); 2) the learning media expert test was in the very good category (93.69); (3) the learning design expert test was in the very good category (95%); (4) individual trials were in the excellent category (83.83%); (5) small group trials were in the very good category (88.90%) and field trials were in the very good category (92.51%).

- The effectiveness of HOTS-based English teaching materials developed was more effective than textbooks. Hypothesis testing results prove that there were significant differences between student learning outcomes that were taught by the use of HOTS-based English teaching materials with student learning outcomes that were learned using textbooks. This was indicated by the results of data processing obtained tcount = 2.33 while ttable = 1.68. Obtained that tcount> ttable. So the learning outcomes of students who were taught with HOTS-based English teaching materials with an effectiveness of 81.13% higher than the learning outcomes of students who were taught with textbooks with an effectiveness of 77.14%.

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