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Development of Scientific Learning Model on Trading Company Accounting

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Abstract

The purpose of this research is to develop Problem Based Learning and Project Based Learning using scientific learning approach in accounting subjects of class XI trading companies Accounting of SMK Negeri 1 Malang. This type of research is the development of research using a development model Borg and Gall (1983) which has been modified according to the needs of research. The trial subject of this research is the subject teachers as well as the trading company's accounting class XI AK 3 and 4 which respectively accounted for 36 and 31 students. Data were analyzed using content analysis techniques and descriptive percentage. The results validate learning experts obtained a value of 84.38%, 75% of subject matter experts, 77.26% of the experts the development of teaching materials, as well as from the user namely 75% of teachers and students by 82.29%. The average percentage of 79.79% for the overall learning model, 75% for instructional material contained in the book of teachers and students, as well as 77.26% of the student book so it can be concluded that the learning model that consists of teachers and students developed books is feasible and can be used in the learning process.

How to Cite

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INTRODUCTION

Education constitutes a benchmark of the progress of a nation. With the rapid advancement of science, technology, art, culture, and competition in the global era requires the improvement of the quality of education that is carried out in accordance with the times to produce qualified graduates. The government has sought to improve the quality of national education by developing curriculum in 2013 but the implementation still needs improvement. One is related to the efforts of educators in organizing and empowering learning variables such as learning environment consisting of educators interaction with learners, among learners, tools, materials, and learning resources to support the success of learners achieve learning objectives. This is consistent with the opinion of (Hosnan, 2014) which states that all these variables are interrelated in support of meeting the educational goals specified. Designing learning should be done by educators before the learning activity by determining the methods, strategies, and approaches in designing appropriate learning models adapted to the learning objectives, materials to be delivered, the number of students, and development of learners. Teachers need to master and can apply various teaching skills in order to achieve the learning objectives are diverse because every model requires management systems and different learning environments (Trianto, 2012).

The problems that arise from the process of learning in the classroom such as learning is still centered on the teacher and the application of learning models that have not been effective. Learning which remains centered on teachers leads students to become passive and bored during the study. Less maturation of teachers in designing lesson plans such as the unavailability of teaching materials that support learning learners cause difficulties in understanding the subject matter so that the impact on learning outcomes is less than the maximum.

The process of learning of 2013 curriculum is directed to student-centered. Education should lead students to learn actively and independently not only receive knowledge given by the teacher alone. Students who learn actively and independently will seek out, cultivate, construct, and understand with their own experience so that the knowledge gained will be meaningful and durable. Learners need to be encouraged to work to solve problems, find everything for themselves and strive to realize his ideas in order to truly understand and can apply their knowledge (Permendikbud No. 81A in 2013).

Referring to the above problems, as one of the designated schools were targeted pilot curriculum implementation in 2013 will require appropriate learning management curriculum objectives that can accommodate students active learning and critical thinking. The learning process in the implementation of the curriculum in 2013 to apply the learning to use a scientific approach (scientific approach). A scientific approach is a learning approach that directs students to actively construct concepts, laws or principles through the stages of scientific packed in the core activities of learning that includes activity observed (observing), ask (questioning), try/collect data (experimenting), reasoning/associate (associating), and communicating (communicating) (Hosnan, 2014). Some models, strategies, or learning methods can be applied to teachers by integrating elements of the scientific approach to learning. The model which is in accordance with scientific learning approaches includes problem-based learning (problem-based learning) and project-based learning (project-based learning)

(Sani, 2014). As noted Sani (2014), problem-based learning is defined as a learning process that makes students learn through real-world problem-solving efforts (real-world problem). Meanwhile, project-based learning is defined (Sani, 2014) as learning involves students in designing, manufacturing, and display products to address or solve the problems of the real world. Based on these definitions can be expressed two equations problem-based learning and project-based learning is related to how to learn concepts based on the problems and implement the ability to solve problems that occur in the real world. The difference between the two is that the presence of the product which is to be made and shown by students in project-based learning (Sani, 2014). The use of these two models alternately in learning in a context of the materials studied to create meaningful learning environments which aimed not only to reach the knowledge alone but also the attitudes and skills for students are trained to work together, communicate, solve problems, and make decisions.

In this study, a model learning problem-based learning and project-based learning developed using a scientific learning approach. The trials will be conducted on a class XI student majoring in the accounting of SMK Negeri 1 Malang. Selection of test subjects is due to the vocational school graduates are required to not only understand the concept, but also the practice so that vocational students need to be trained to solve real-world problems that exist, create products, and display it. The material is used in the trading company's accounting of class XI student of SMK appropriate curriculum syllabus, 2013. This material is considered relevant if applied using problem-based learning and projects.

The learning model is a pattern that describes the sequence of learning activities and the creation of learning environments from the beginning to the end of the lesson presented by teachers including the determination of approaches, strategies, methods appropriate to the subjects being taught, learning objectives, and the level of ability of learners so as to enable students to reach specific learning goals.

Basically, in the development of learning models are the basic elements that are closely involved. Joyce & Weil (1980) reveals five basic elements in the learning model are: (1) syntax; (2) social system; (3) principles of reaction; (4) support system; and (5) Instructional and nurturant effects. Therefore, the assessment (evaluation) is said to have a good learning model if it has met the five elements. Assessment of the results of the development of this model also includes an assessment of materials and the quality of teaching materials such as books and teachers guide students' books to be used in the implementation of the learning model Problem-Based Learning and Project Based Learning.

Problem Based Learning is a learning model that directs learners to think critically in solving real-world problems to obtain the concept of the material being studied with the teacher role acting as a facilitator in learning. While Project-based learning is an instructional model that directs students on workmanship project to solve the problems that occur in the real world.

Both the learning model has different learning stages. Problem-based learning according to Trianto (2010) has five stages: (1) orientation of students on the problem; (2) Organize students to learn; (3) To lead the inquiry individually or in groups; (4) Develop and present work; (5) Analyze and evaluate the problem-

solving process. While Project Based Learning by The George Lucas Educational Foundation (2005) in Nurohman (2007) has six phases including: (1) Determination of Questions Fundamental; (2) Designing Project Management; (3) Develop a schedule; (4) Monitor Students and Advancement Project; (5) Assessing Results; (6) Evaluate the experience. The rate of Problem Based Learning and Project Based Learning grabbed three aspects: cognitive, affective, and psychomotor.

METHOD

Research and development are to produce a product in the form of scientific learning model is a model of learning Problem-Based Learning and Project Based Learning developed using scientific learning approach. This model can be used in the learning process according to the curriculum in 2013 for accounting subjects of the class XI trading company on the accounting material trading company. In keeping with these objectives, this research using the Research and Development (Research and Development / R & D) are modified according to the research needs of the model Borg and Gall (1983). The steps are performed: (1) analysis of needs; (2) product development; (3) test the validity of the product; (4) product revision to-1; (5) user test is limited; (6) product revision 2; (7) the final product.

Needs analysis is done based on the needs of the learning model by using appropriate scientific approach to the curriculum of 2013. The product development is done in three stages: preparation, preparation of the product and completion product. Test the validity of the product made after the product was developed to determine the feasibility of the product before use by the user. Test the validity of the products carried by learning experts, subject matter experts, and expert development of teaching materials. Users are limited in this study were teachers in charge accounting subjects trading companies as well as students of class XI and XI AK 3 4 SMK Negeri 1 Malang each class numbered 36 and 31 students.

Data obtained in the form of quantitative data and qualitative data. For qualitative data, content analysis of comments and suggestions from the validator was conducted. Meanwhile, for quantitative data, percentage descriptive analysis techniques were used. The instruments used in data collection research and development in the form of a questionnaire with Likert scale 1,2,3,4. Questionnaires were used that validation questionnaire for learning experts, materials, teaching materials, teacher and student responses to the instructional model Problem-Based Learning and Project Based Learning to use a scientific approach.

Data analysis techniques used are:

Formulas for ratings per item:

$$P_i = \frac{x_i}{y_i} \times 100\% \quad (\text{Sudjana, 1990: 45})$$

The formula for an overall assessment of items:

$$P = \frac{\sum_i^p IX}{\sum_i^p IY} \quad (\text{Sudjana, 1990: 45})$$

Description:

P_i : Percentage of assessment items / criteria-i

- P: Percentage of overall assessment
 x_i : Score for item / criteria-i
 y_i : score maximum for items / criteria-i
 $\sum_i^p Ix_i$: Total score for item / criteria-i
 $\sum_i^p Iy_i$: Total maximum score for an item / criteria-i
N: Many items/criteria assessed in the validation
l: 1, 2, 3, 4, 5, n
100%: constanta

Eligibility rate of research result and development product used a percentage score. The better the percentage score of the data analysis, the better the level of feasibility study results and developing a product. Eligibility rate criteria for percentage analysis of product development results are presented in Table 1.

Table 1. Eligibility Criteria for Scientific Learning Model

| Percentage Rate | Interpretation |
|-----------------|----------------|
| 81% -100% | Very Worthy |
| 61% -80% | Worth |
| 41% -60% | Enough Worth |
| 21% -40% | Less worthy |
| 0% -20% | Improper |

(Source: Arikunto, 2010: 44)

Once the eligibility criteria for product development known, it should be decided whether the product needs to be revised or not. Advice from the validator, teachers, and students determine the decision for revision.

RESULT AND DISCUSSION

Products Development Results

A product that has been developed in the form of scientific learning that integrates measures learning model Problem-Based Learning and Project Based Learning are realized in the form of a book teachers and students in accordance curriculum books of 2013. Product development results are presented in Table 2 below:

Table 2. Trailer Product Development and Books Teacher Student Book

| No. | Product | Description |
|-----|---------------|---|
| 1. | Student Book | Cover, Acknowledgement, Table of Contents, Instructions for Use Book Student, Model Presentation, Concept Map, Submission Material (1) the provision of information supply of merchandise, (2) recording the periodic method, (3) registration with perpetual method, (4) determining the cost of sales, (5) determining the cost of sales with periodic method, (6) the determination of cost of goods sold with perpetual method), Exercise and Assignment, Check ability, Evaluation, Assessment, Glossary, References, The index, Biography Author. |
| 2. | Teachers Book | Cover, Foreword, Table of Contents, Scope of Competence, Background, Development of Instructional Model, Scenario Learning, Student Book Answer Key, Sample lesson plans, assessment format, References, Biography Author. |

Data Analysis

Based on validation by three validator and limited user testing, it is known that the whole product development results declared eligible but still needs to be revised in some parts. Based on the validation of learning experts obtained an average percentage of 84.38%, and the average user validation testing of products limited teachers and students in grade Project Based Learning and Problem Based Learning earn an average percentage of 78.64%. Based on the overall analysis of the model validation study, it is obtained an average percentage of 79.79%. As for subject matter, experts obtained a percentage of 75%. Furthermore, expert of teaching materials development obtained by percentage of 77.26%.

Product Revision

Revision aimed to provide input to the learning model that was developed for the better. Revisions were made based on feedback, suggestions, and opinions of experts and unlimited users. Here is the part that is undergoing revision are presented in Table 3.

Table 3. Revised Product Development

| Validator | Description |
|------------------|---|
| Expert Learning | <ol style="list-style-type: none"> 1. In Teacher Books, indicators of achievement of competencies in each basic competence achievement are not yet shown so that the entire revised Basic Competence incompetence achievement indicator which is reflected in learning scenarios (learning objectives) or RPP on competence achievement indicator. 2. In Student Book, scientific activities should be directed at achieving the indicators that have been set. In the information gathering activities in the Basic Competence 5 have yet to lead students to the achievement of the indicators so that the revision by replacing the given task to match the competency achievement indicator. |
| Material Experts | <ol style="list-style-type: none"> 1. The need for the addition of an Indonesian and English term for specific identification method, FIFO, LIFO, simple average method, the weighted average method, and the moving-average method. 2. In a scientific study Project Based Learning, it is better to put the case that allows students to go directly into the field. Revisions performed on project tasks given to the Basic Competency 3.6 and 4.6 as well as 3.7 and 4.7 Basic competence that lead students to go directly into the field. 3. The need to add a description modest scale trading company as a sign of coverage of the whole book discussion in order to avoid a more complicated discussion. 4. The preparation of the material in the book students need to be compacted precisely in the discussion of the periodic inventory system and the perpetual recording that originally separated on points D and F revised to point D alone. |

| | |
|--|---|
| Instructional Materials Development Expert | <ol style="list-style-type: none"> 1. Eliminate the word "module" on the cover. student book 2. Revision cover include: 1) change the color element that does not resemble supermarket brands, 2) change the design so as not to resemble paper, 3) gives the center point in the form of relevant illustrations. 3. Change the order of the presentation of the book students with distinct parts and chapters. The section contains instructions while Chapter Contains student book content. 4. Add a reference source image. 5. Eliminate ad powerful words to persuade the students shopped at Carrefour. 6. Adding terms in a glossary that before the revision is only 10 to 21 after revision. 7. Adding an index on the student book. 8. Adding a list of relevant references. |
| Teacher | <ol style="list-style-type: none"> 1. In teachers book, time allocation changed to 8JP or 8x45 minutes for each KD. 2. Detailing the preliminary activities consisting of activities greetings, apperception, motivation, and KD delivery to be achieved. 3. Adding a description of the format used in the assessment of learning. 4. Adjusting indicators of achievement of competencies and objectives. One indicator contains one purpose. 5. Adding information about assessment provisions that are currently used are Permendikbud No. 104 of 2014 related to the assessment of attitudes, knowledge, and skills. |

Characteristics of product development are the use of scientific learning model namely a model of learning that uses a scientific approach that was developed using the model of Problem Based Learning and Project Based Learning. In this model, students are grouped into different teams and perform troubleshooting tasks and project assignments. Specifications developed learning model is generally based measures/syntax of each model of learning that is integrated into scientific learning activities: to observe, ask, gather information, associates, and communicate. Stages and scientific learning model scenarios are compiled in a book teacher and student books.

Excess Products include: 1) learning model that was developed in accordance with the teaching approaches used in curriculum 2013 by using scientific approach, 2) development using the two models of learning are integrated in the learning approach scientifically namely Problem Based Learning and Project Based Learning, 3) the development of this model is accompanied by a book teacher and student books in implementing learning the scientific model of Problem Based learning and Project Based learning, 4) in the books the teachers are lesson plan appropriate curriculum 2013 in which includes learning scenarios scientific model of Problem Based learning and Project Based learning and assessment used during the learning process is based on the latest regulatory Permendikbud No. 104 of 2014 which includes provisions on the assessment realm of attitudes, knowledge, and skills, 5) student book contains material, exercises, assignments, evaluation in accordance with the basic competencies to

be achieved, 6) The book contains the key answers to teacher assignments or evaluations that exist on the books making it easier for teachers of students in the discussion of the material. Besides the advantages of the products that have been disclosed above, there are also weaknesses of product development in the form of model of learning scientific, including 1) It takes time to understand step-by-step learning model scientifically because the user needs to be adapted to the material that is taught either using Problem Based Learning or Project-based learning, 2) use of models continuous learning can make students bored.

CONCLUSION

The products that have been developed is in the form of scientific learning which integrates Problem Based Learning and Project Based Learning realized in the form of a book teacher and student books appropriate curriculum 2013. Overall development results product declared eligible based on the results of validation and trial of limited users. Based on the validation by three validator and limited user testing is known that the whole product development results declared eligible but still needs to be revised in some parts. Based on the validation of learning experts obtained an average percentage of 84.38%, and the average user validation testing of products limited teachers and students in grade Project Based Learning and Problem Based Learning earn an average percentage of 78.64%. Based on the overall analysis of the model validation study, it is gained an average percentage of 79.79%. As for subject matter, experts obtained a percentage of 75%. Furthermore, expert of teaching materials development obtained by percentage of 77.26%.

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