

## Developing Teaching Materials Based on KKNi Curriculum to Increase the Student's Critical Thinking Ability in the Faculty of Economics Universitas Negeri Medan

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### Abstract

This Research and Development (R&D) design aims to produce learning outcome evaluation products that are based on KKNi curriculum in order to improve student's critical thinking skills. Specifically, the research tries to describe (1) validity, practicality, and the effectiveness of teaching materials which are used for a learning outcome evaluation. This research was developmental research using a 4- P model design. This design consisted of 4 stages, namely defining, designing, developing, and dissemination. The results of the defining stage were used to design teaching materials. Then, the draft of the design was validated and tested. The teaching materials were tried and examined to students in accounting education who were currently studying in the third semester with an eye to study and evaluate the learning results. The teaching materials which were considered feasible and effective were then distributed to other classes to test their effectiveness before spread out more widely. The results revealed that (1) the teaching materials that were developed in this research were valid. The average total validity of the lesson plan (RPP) and the teaching materials were 4.14 and 3.95 respectively. Practically, these average scores mean effective in terms of the ability of the lecturers to carry out the lesson, the level of student activities, the learning mastery, and student's positive responses. (2) The teaching materials were effective to improve the student's ability to think critically indicated by a value gain of 0.463.

**Key Words:** curriculum, critical thinking, development, teaching material

### Introduction

The Indonesian government has established the Indonesian National Qualifications Framework (KKNi) for Higher Education to prepare a course's curriculum through the Law of the Republic of Indonesia Number 12 of 2012 on Higher Education and the Presidential Decree No. 8 of 2012 on .. (add here). The Law was practically implemented through the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 49 of 2014 on National Standards for Higher Education. The curriculum is a refinement of the curriculum that has existed before i.e. the Core Curriculum and Institutional which is based on Law no. 232/U/2000 and 045/U/2002 or commonly referred to as the KBK (Competency-Based Curriculum). Universitas Negeri Medan (Unimed) has undertaken KKNi curriculum where students are required to perform six tasks covering routine tasks, a critical book report, research review/journal review, mini-research, idea engineering, and a project.

One of the important parts in the learning implementation that cannot be overlooked is the evaluation process of the learning outcomes. It is one of the competencies that must be owned by a student who serves as a teacher candidate. This competence is in line with the duties and responsibilities of a student-teacher candidate that is to have skills in the evaluation process which is based on the principles of the learning outcome assessment.

The learning process which is related to the materials used in the classroom does not meet the learning needs of the students. The presentation of the teaching materials is unable to encourage the students to have

the knowledge of the evaluation process/learning outcomes and steps in the achievement test development because it is needed by a prospective teacher.

Teaching activities undertaken by the lecturers are expected not only to provide students with the mind store information activity but also should provide an opportunity for self-development and a student's intellectual enhancement. It should allow the students to reflect on the materials in real-life situations.

Teaching materials are any form of materials that are used to assist the lecturers in carrying out activities in the classroom. Teaching material is the foundation of learning in the classroom (Muslich, 2010). With the materials of teaching, learning in the classroom will be more focused and structured. Furthermore, (Muslich, 2010) states that teaching materials have several functions, including to (1) achieve the competencies to be achieved in learning, (2) improve the student's learning outcomes, and (3) assist the teachers in managing the class. Recognizing some of the things at the top, it necessary to provide a material resource that trains the students to think critically in the learning process.

In other respects, (Ordonez, 1996) points out that learning with efforts to improve critical thinking skills will be much appreciated that in the process, learning is done in a togetherness. Empowerment of learners in the learning potential applied to cooperative learning cooperative learning-oriented. Learning establishes and implements information and knowledge in a logical, critical, creative, and innovative ways. Demonstrating the ability to think logically, critically, creatively, and innovatively in decision-making is a skill that must be owned by the students. (Ennis, 1996) argues that critical thinking is a process that aims to make decisions that go in mind about what is believed and what is done . Critical thinking is one of the stages of higher-level thinking. Dewey (Fisher, 2008) highlights that to think critically is considered as active, persistent, and thorough about a belief or form of knowledge. It is viewed from the angle of the reasons that support it and the conclusions that become the trend .

(Corebima, 2005) in a study that carried (Alexander, Commander, Greenberg, & Ward, 2010) concluded that the development of thinking critically in education can improve thinking critically. Research conducted by (Maasawet, 2002) concluded that students who have the ability to think critically tend to have higher results of learning in the study of science. The results of the study have indicated that the process of thinking in learning is a very important development. The teaching materials to learn the evaluation of the results of studying accounting is a medium to restructure knowledge and thinking through arguments by using thought which is high (Quitadamo & Martha, 2007).

Thus, critical thinking can allegedly be used to help the learning process that is more efficient in learning. To assess the ability to think critically, (Ardhana, 2000), uses three indicators, (1) Fluency is the ability to resolve issues with some answers and valuable right, (2) Flexibility is the ability to resolve problems with the way that is different from that valuable right, (3) Novelty is the ability to resolve issues with some answers and valuable right, but the answers were given an answer that is not unusual carried out by students at the level of knowledge.

Based on the explanation above, this research aims to produce teaching materials on the evaluation of learning outcomes based on KKNi curriculum to improve the ability to think critically. Specifically, the study tries to describe (1) validity, practicality, and the effectiveness of teaching materials of the evaluation of learning outcomes.

## Methods

This research involved students who were currently studying in the third-semester. They were taking a course entitled the Accounting Learning Outcomes Evaluation in the Faculty of Economics Unimed. The students were majoring in Accounting Education Study Program. This research employed a Research and Development design using (Borg & Gall, 1983) a procedural model. The model was descriptive illustrating the flow or procedural steps that must be followed to produce a particular product (Setyosari, 2012). Stages of the Borg's & Gall's procedural model include (1) initial research and information gathering, (2) planning, (3) initial product format development, (4) initial trials, (5) product revisions, (6) trials field, (7) product revision,

(8) field test, (9) final product revision, and (10) dissemination and implementation. The ten steps are not all implemented, but use stages were developed by Thiagarajan (1974) by using the model of 4-P or 4 D. The first stage is Defining. It includes needs analysis, student analysis, task analysis, and concept analysis. The second stage is Designing which is followed by the Development stage. The Development stage includes Validation of experts and Test and Try Development. The final stage is Dissemination.

In this research, the defining stage was performed by tracing theoretical concepts and analyzing the materials used in the field. The stage also involved an interview with the lecturers and distributed questionnaires to students in order to obtain authentic data about the needs of teaching materials in the field. The second stage, i.e. designing, covered preparation of the test 's ability to think critically that draws up a standard test the ability to think critically based on stated indicators. Test's ability to examine the student's critical thinking were arranged in the form of pre-test and post-test. The test measured several aspects such as fluency, flexibility, and novelty. The test who prepared the form of description consists of three grains of matter. Thirdly, the Development stage was conducted with experts in test methods, test practitioners, and field tests in order to determine the validity and effectiveness of the teaching material which was being taught. Expert tests were carried out at the education department of Unimed on lecturers who taught learning outcomes evaluation courses. In addition, it was also given to students who were taking learning outcomes evaluation courses. Fourth, the stage of dissemination aimed to introduce the material taught through distribution the number is limited. Materials teaching that has been developed will be tested on a small group (limited groups). Then the results of the implementation of the limited try out were revised before tested on a larger group (test field ). In the study, the researchers limit the scope to only validation testing. validation testing is the activity of implementing teaching materials. This step is to measure the achievement of the objectives.

The research instruments developed in this study were to test the ability of critical thinking, observation sheets and sheets validation student activity materials. Instruments were modified according to the students' critical thinking skills. Critical thinking ability tests used in this study were a form of matter description. To demonstrate the improvement of students' critical thinking skills after learning using teaching materials, the researchers used formula by Meltzer:

If  $g < 0.3$  then the increase categorized as low  
 $0.3 \leq g \leq 0.7$  then the increase is average  
 $g > 0.7$  then the increase categorized as high

The Data in this study were collected using a non-test technique. The data were generated in the form of quantitative and qualitative data. The quantitative data were obtained through tests of creative thinking ability. Qualitative analysis techniques were used to analyze the validation, practicality, and effectiveness of the teaching materials.

## **Results and Discussion**

### **Product Description**

Teaching materials in the present research were developed by using 4-D design models. This design consisted of four stages, namely the define, design, develop, and dissemination. The results of the step by step development of teaching materials were described as follows:

### **Results of Defining Stage**

Results from a needs analysis of interviews with faculty evaluation of learning outcomes accounting teaching in the third-semester study program of accounting education, The lecturer rarely involved students to take part in the classroom activities. The learning process that was related to the materials did not meet the learning needs of the students. Further, the presentation of teaching materials was not able to encourage the students to have the ability to assess learning outcomes and to carry out the assessment process.

Analysis results for the student, based on an academic skill, were described as follows. First, the learning process of teaching faculty often did not correspond to the properties of the material. The learning process also paid less attention to the abilities of different students. It's likely because the lecturer who taught courses in accounting learning outcome evaluation came from a non-educational background. Second, in the teaching and learning process, lecturers were not able to take advantage of other learning resources in addition to the modules. As a result, the material was very limited and sometimes did not correspond to the demands of the curriculum of KKNi. After that, the lecturers were unable to develop the teaching materials with different forms of presentation making the learning process became monotonous and boring. Finally, attention was barely given to the role of students' critical thinking skills. Teaching materials evaluation of learning outcomes based on the accounting curriculum of KKNi were to be developed based on the analysis of the student's needs. Then, it was obtained that about 90% of the students were in a desperate need of teaching materials.

Results of the analysis of KKNi task-based curriculum are presented as the following. The task is divided into structured and special tasks. The structured task consisted of six tasks covering the first task i.e. *Critical Book Report* which contained the description and analysis of the book's contents, conclusions, and critical position of the students. It also consisted of a Research Review/Journal Review. They reviewed all components which critically analyze the main findings, strengths, and weaknesses of the research. The task also incorporated Mini Research. It was basic research that was minimally composed of the questions (Hypothetically, the main goal), theory, instruments, data collection, data analysis, and conclusions. Then, the task consisted of idea engineering in the form of "wild ideas" creative ideas. After that, the task required a Project. The students performed treatments on a model or product to improve the community or specific praktek<sup>2</sup>. The final task was Routine Tasks. These were the tasks that are routinely given by the lecturers to train attitudes, knowledge and specific skills. Specific tasks that referred to the indicators of achievement tests critical thinking skills could be seen from critical thinking skills such as fluency, flexibility, and novelty.

The results of the concept analysis aim to identify and develop the concept used on the concepts of matter. The results of the analysis of the concept that was used on the concepts of the material were given as follows : (a) Students can make a question grid: The students explained the meaning of the question grid, explained the function of the item grid, made an objective test item grid, and made a subjective test item grid. (b) Students could arrange test and non-test assessment instruments: They made questions in an objective form to measure the achievement of the indicators that had been formulated, made questions in the subjective form to measure the achievement of the indicators that had been formulated, made performance assessment instruments, made a product assessment instrument, made a project appraisal instrument, made portfolio appraisal instruments, made a self assessment appraisal instrument , and made an affective valuation instrument. (c) Students could analyze the questions and fix them by calculating the validity of items, calculating the reliability of items, and calculating the level of difficulty of items. (d) Students could process scores such as process written test scores, process performance appraisal scores, process product appraisal scores, process project appraisal scores, process portfolio appraisal scores, process self-assessment scores, and processing assessment scores, (e ) Students could make a report of the results of the assessment: explain the understanding of reports of the results of the assessment, explain the function of the report of the results of the assessment , explain the benefits of the report of the results of the assessment , and make a report of the results of the assessment

### **The Result of the Design Stage**

The result of the design stage was to developed critical thinking skills test standards based on indicators. Test critical thinking skills that were arranged in the form of items to pre-test and post-test. Test capabilities included aspects of fluency, flexibility, and novelty. Tests compiled a narrative form and consisted of three items.

### **The Result of the Development Stage**

The result of the development stage was reported through the activities during the development stage in data validation teaching materials. A draft that had been produced subsequently was validated by experts. Validators that validated the teaching materials consisted of five people. The validators were an expert in the field of education. The results of the validation were feedbacks that were used as a correction and guideline in the improvement of teaching materials. In this research, the teaching materials had been revised and declared valid by the validator called draft B.

The results of the five validators regarding their evaluation on the materials revealed that the average total was 3.95. It means that the learning materials were considered valid. These validators concluded that teaching materials can be used with minor revisions. It included suggestions and criticisms, the facilitator's corrections of input into the revision of the teaching materials. After the revision, teaching materials were eligible for use in the test phase for the validity of teaching materials to meet the requirements.

The results of expert validation of the lesson plan were reported as the following. Based on the calculations, the average total was 4.14. This means that the components in the RPS were considered very valid. The five validators concluded that the RPS could be used with minor revisions.

The results of the validation and revision tests critical thinking skills must include language and content-writing. Conclusion of the validation test critical thinking skills based on the calculation fifth validation validator concluded that tests critical thinking skills could be used with minor revisions. After the revision, critical thinking skills tests were eligible for use in the test phase for teaching materials and should meet validation requirements.

Before the treatment, the first tested the limitations of draft B to 10 people the third-semester students who were studying accounting in the evaluation of learning outcomes. Results of the analysis of the limitations of the test used to revise the draft materials that had been validated. From the test results limitation, materials that have been developed unchanged. Draft B which has been declared invalid is called draft C. Then, draft C was used for testing.

The results of the development stage. Once the draft of teaching materials was produced and declared valid, then a test was performed. The test was done once. Based on the lesson plan (RPP), the learning was carried out for 3 meetings. The selected class was the third-semester study program in Accounting Education. It involved 21 students. The treatment was observed by 2 observers. One observer was in charge of observing the activity of students and another observer was responsible for observing the students' ability to follow the lesson. Researchers studied the overall learning process.

After that, critical thinking skill tests were given to students consisting of a pre-test and post-test. The analysis results documented that the third item on the pre-test pilot class was very valid and reliable. It means that the third item could be used to measure the critical thinking skills of the college student.

From the results of the post-test creative thinking abilities in the class test the validity of the data obtained items, difficulty-level data item, the data distinguishing items and data reliability problems. The third item revealed that the post-test was valid. That was the third item that could be used to measure the students' critical thinking skills. Accordingly, all post-test items fit for use.

The results of the analysis of power distinguished each item about the results of the calculation of the level of difficulty of each item about the post-test on grade test try power differentiator for items about the number 1 included in the category quite well, while the power difference item about the number 2 and 3 included in the category fine. Questions were decent used if the item about having an index southwest distinguishing more than 0.20. Because it was the third point about post-test feasible to use.

Based on the reliability calculation, the post-test reliability coefficient was 0.870. This means that the post-test instrument for reliability in critical thinking skills was considered high. Hence, it could be said that the post-test was developed to reliably measure students' critical thinking skills.

Description result data practicality of teaching materials, teaching materials have seen the practicality of implementing the learning ability of lecturers. Lecturer activity was observed by an observer. Observations were carried out to assess the overall performance of lecturers in the use of teaching materials developed.

Based on the calculations, the percentage of the lecturer's activity at the first meeting was 69.09%. This means that the ability to implement learning lecturer at the first meeting was categorized "good". The lower the percentage of the lecturer's activities at the first meeting than the meeting II and III meetings may be due to the process of adaptation between the lecturers and the students.

The percentage of the lecturer's activity in meeting II reached 81.82%. This means that the ability to implement learning lecturer at the meeting II was categorized "excellent". At the third meeting, the percentage achievement of faculty activity of 83.64%. This means that the ability to implement learning lecturer at the confluence III included in the assessment criteria was "excellent". When referring to the criteria set out in the previous chapter, the attainment of the capability of lecturers is met. Therefore the teaching materials developed meet the requirements into practicality.

### **Description Result of Teaching Materials Effectiveness**

The effectiveness of teaching materials was seen from student's activities, completeness positive learning outcomes, and student response. The student activity was observed by an observer. These observations were made against one group. This was done on the ground that one group was considered to be representative of other groups, considering the relatively equal ability of each group. Moreover, the observations may not be possible accurately to more than one group.

Based on the calculations, the percentage of student's activities at the first meeting reached 71.11%. This suggests that the student's activity during the lesson at the first meeting was considered "good". The percentage of student activity at the second meeting was 75.56%. This indicates that activity during learning at a meeting II included in the criteria of "good". The percentage achievement of student activities at the third meeting was 80.00%. This suggests that the activity of students during study at the third meeting was categorized "good". When referring to the criteria set out in the previous chapter, the achievement of student activities have been met.

Student responses to questionnaires were indicated by 21 students who had followed the treatment results of the teaching material's development. It was shown on the percentage of student responses to the instructional components of the average which was above 75%. When referring to the criteria set in the previous chapter, the achievement of the questionnaire responses has been fulfilled. Therefore the criteria of student activity achievement, attainment, and achievement of learning outcomes completeness questionnaire responses of students are met then the teaching materials developed to meet the requirements of effectiveness.

Based on the analysis above, teaching materials developed have met the requirements into valid teaching materials, practical and effective. To that end, teaching materials will be implemented.

### **The Results of the Deployment Stage**

After the teaching materials met the criteria of validity, practicality, and effectiveness at the end of the treatment, the obtained materials were final. The next step was the deployment stage. This was done to determine the effectiveness of the teaching materials in the learning process. Final teaching materials was implemented. Implementation was done only through validation testing. At this stage, the research used a class of Accounting Education Program, in the third semester which involved 24 students.

Based on the calculations, the percentage of achievement lecturer activity at the first meeting was 80%. This means that the ability to implement learning lecturer at the first meeting included the assessment criteria of "good" achievement. The lecturer's percentage at the meeting II activity was 80%. This means that the ability to implement learning lecturer at the meeting II was considered "good". At the third meeting, the

percentage achievement of faculty activity reached 81.81%. This means that the ability to implement learning lecturer at the confluence III included in the assessment criteria "excellent".

According to the data analysis of students' critical thinking skills obtained that the number of students who earned a score  $\geq 7$  there are as many as 18 students from a total of 24 students or equal to 75%. When referring to the criteria set in the previous chapter, the completeness of student learning outcomes is met.

### **The Level of Students' Critical Thinking Skills**

The success in increasing creative thinking could be observed through the revised process materials development of teaching and learning practices. The analysis conducted by an analysis of the level of the student's critical thinking skills used teaching materials which used the curriculum of KKNi.

Aspects of creative thinking abilities seen in this research were the increased score of 50.27% for the smooth aspect. This means that learning using current teaching materials could improve the ability of students' creative thinking to generate new ideas or answers in solving 50.27%.

Score's aspects of flexibility increased by 74.05%. This means that learning to use teaching materials developed can improve creative thinking ability of students to use many approaches or ways of completing 50%. This means that learning to use teaching materials developed capable of increasing the critical skills of students to solve problems in a way or a new approach for students by 50%.

The value of the student's creative thinking ability was obtained from the difference between the post-test scores divided by the difference in the maximum score (ideal) with a pre-test score. Overall, the value of the creative thinking ability of students reached 0.463. This increase is included in the category of moderate improvement. The mean gain was an increased ability to think creatively picture per aspect seen in Table 4:38

This research has successfully developed a valid, practical, and effective teaching materials and can improve the student's thinking ability. Previous studies support the results obtained in the study, for example Paryono's study (2015) that found that there were differences in the ability to think critically. With regard to the ability to think critically Lopez, et al (2015) found that the results of the students of SMK-BM in Medan found that they needed a more dynamic model of learning and practice for train the students could solve the financial problems related to accounting. Research conducted by Maasawet (2002) concluded that students who had critical thinking abilities tend to have higher learning outcomes. Research by Alexander et al (2010) concluded that the development of critical thinking in education can improve critical thinking.

### **Conclusion**

Based on the results of data analysis, this research's teaching materials were *effectively* improving the student's ability to think critically. It is seen from the value enhancement which obtained a student after the following lectures by using a material of teaching. Values increase in the ability to think critically included in the category of the increase being. The aspects of critical thinking skills are fluency, flexibility, and authenticity. Based on the results of the data analysis, data from the three aspects mentioned, the aspect of flexibility increased higher compared to the second aspect of the other. It is demonstrated that the curriculum KKNi effect the level of ability to think critically student.

The lecture process in the first phase of the KKNi curriculum presents real problems that can build students' thinking. Metacognition skills integrate students to design their strategies and concepts. This ability is in accordance with the characteristics of critical thinking flexibility, namely the ability to build ideas or approaches that are diverse in solving problems. Aspects of the ability to think critically others who experienced an increase in both are fluency. The third phase in the curriculum of KKNi encourages students to share ideas are free. Students sought for mutual help to complete the tasks given and encouraged the exchange of ideas are free. The ability is in accordance with the characteristics of thinking critically smoothness, namely the ability to build ideas or approaches that vary in completing tasks.

Aspects of the ability to think critically others are experiencing an increase in third is authenticity. The improved aspect of this is the increasing score of low achievers. This is possible because of the limited time in

the investigation, so students are a little difficult to find solutions that are not normally done by students at the level of knowledge. The ability is in accordance with the characteristics of thinking critically authenticity, namely the ability to resolve problems with the answers or ideas are new. Some previous studies support data obtained in the present study. This research has succeeded in developing teaching materials that are valid, practical and effective and can improve students' thinking abilities. The teaching material developed in this study is based on the KKNI curriculum.

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