

DEVELOPMENT OF OPEN-ENDED BASED LEARNING TOOLS TO IMPROVE CREATIVE THINKING AND SELF-EFFICACY

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Abstract

This study aims to: 1) acquire tools of learning developed based on an open-ended approach using hypercontent that meets the validity, practicality, and effectiveness to enhance the competence creative of thinking and self-efficacy of students; 2) describe how increasing creative of thinking competence and self-efficacy skills are performed using an open-ended learning device using hypercontent. The research uses ADDIE development models. Research indicates that 1) a open-ended learning device using hypercontent to upgrade creative of thinking competence and developed text students' self-efficacy have met valid, practical and effective criteria; 2) upgrade creative of thinking competence and an independent independent SMK student using an open-ended approach learning device using a hypercontent developed on line and grooves, viewed from the normalized gain index. It was found that the increased creative thinking competence of the student in the first attempt had increased scores with the "low" standards and in the subsequent endeavor had increased the score with the "medium" criteria. The increased student growth in the average value of self-efficacy over the I to II results.

Keywords: development; learning tools; open-ended approach; creative thinking skills; self-efficacy.

INTRODUCTION

In today's world of education, especially information technology, it is a requirement for abilities that can be used and possessed by everyone, including teachers and students. So that with information technology that continues to develop, it becomes a reference for teachers to continuously develop innovation and creativity in the learning process and align technological developments with efforts to develop the quality of education. Advances in information and communication technology can provide many proposals and options for the world of education in encouraging the learning process. Students can know that learning is not only pegged only to the stage of memory without understanding (*rote learning*) but the learning material is able to be understood meaningfully (*meaning learning*).

The year 2020 is a year of concern for all countries in the world as to the emergence and spread of the corona virus (covid-19), known as the corona virus. The case originally originated in China to be precise in the city of Wuhan. The Covid-19 disease in Indonesia in 2020 began to spread to various sectors, one of which was the education sector, the central and regional governments conveyed policies to cover all educational institutions. This is completed to forestall the spread of Covid-19 infection, the training strategy by gaining from home utilizing and using the web applies all the while to limit the spread of Covid-19 illness, namely the hope for the entire community to implement *social distancing* policies, *physical distancing*.

This situation agrees with the provisions This situation agrees with the provisions Minister Republic Indonesia of Education and Culture in Circular Letter Number 4 of 2020, which relates to the execution of the schooling strategy in crisis circumstances to forestall the spread

of the Corona Virus, to be specific completing distance learning. In response to the circular from the government, schools are required to prepare media and distance learning resources *online*, and these conditions force educational institutions to carry out innovations in the process of teaching and learning activities.

Part of the innovation of the above conditions is to carry out *learning online* or online (online). So in situasui like this, online learning is carried out *online* through media such as *WhatsApp* (WA), Telegram, *zoom*, *google classroom*, *google meet*, *teams*, *dragonlearn* and so on. By considering the need for learning media for independent learning that can contain concept / theory material, detailed explanations, and other interesting content that can build imaginative thinking. For these problems, this study aims to overcome various kinds of existing problems by developing learning tools using *hypercontent*.

Hypercontent-based modules can be utilized successfully in self-learning exercises (Hidayat & Rusijono, 2020). The meaning of hypercontent according to Prawiradilaga & Chaeruman (2018: 2), namely "hypercontent" is adopted from a nonlinear digital reading pattern. Another meaning of hypercontent is linked and virtual world. In basic terms hypercontent can be perceived as an idea that joins one material and another all the while in one specific computerized innovation program.

The competence to think creatively is indispensable in all material development of all learning taught in the classroom, especially in mathematics lessons. Because the competence to think creatively can be used to solve mathematical problems in various ways of solving. This is confined by Moma (2015:29) who says: Creative thinking is a psychological action connected with aversion to an issue, considering new data and uncommon thoughts with a receptive outlook, and can make connections in tackling issues. By having the competence to think creatively, students will find it easier to solve mathematical problems.

From the aftereffects of perceptions made by specialists in class 10th grade of SMK Negeri 1 Tebing Tinggi City, it was revealed that students have not yet come up with aspects of creative thinking which can be seen from several indicators of creative thinking that have not been found in solving the questions given to students and in accordance with the data that has been obtained from the provision of *self-efficacy* competence questionnaires in the form of *an online* questionnaire scale. This causes students to be unsure of what is being done and choose to cheat. Such students are called having low *self-efficacy* (student self-confidence in solving problems).

The previously explained presentation shows how important students' creative thinking competence and *self-efficacy* are in the process of teaching and learning mathematics, so teachers must compile and plan good and mature preparations. However, it is very unfortunate from the results of observations and the condition of teachers at SMK Negeri 1 Tebing Tinggi City, it turns out that the teacher has not compiled learning tools with maximum because in process of learning teachers are still using college methods, the learning environment is less conducive, so learning is less fun, and the lack of participation of students in learning and teachers is still not able to organize learning properly, this is because the teacher's understanding of the learning tool is still severely lacking.

The approach needed in improving creative thinking skills and *self-efficacy* is mathematics learning with an *Open-ended* approach. The *Open-ended* approach emerged from the view of how to objectively evaluate students' competence to think at a high level of mathematics. *Open ended* learning can be interpreted as learning that builds students' interactive activities with teaching materials, so that ideas arise to develop problem-solving strategies faced. The *Open-*

ended approach can give open doors to understudies to acquire information, experience in finding, perceiving, tackling issues with a few methods so that understudies' made up ways are thoroughly prepared, in order to urge understudies to develop creative ideas and mathematical mindsets by remembering previous mathematical concepts, then with the *Open ended* approach it is hoped that students will have the competence to think creatively and *much better self efficacy*.

METHODS

This research includes developmental research (Developmental Research). This study used the ADDIE development model. model is selected because of the 5 steps in its systematic, interrelated, structured application, which means that from the first to the fifth stages in application must be systematic and cannot be sequenced at random. The application design that will be used in this study uses the Two Group Pretest-Posttest Design design. This research was conducted at SMK Negeri 1 Tebing Tinggi City which is one of the Vocational High Schools in Bajenis district, Tebing Tinggi City in the even semester of the scholastic year 2021/2022. The subjects of this examination were tenth graders understudy of SMK Negeri 1 Tebing Tinggi City, while the object of this review was a learning instrument created considering an unconditional way to deal with update understudy's imaginative of reasoning skill and self-visibility in the material of succession and series.

RESULT AND DISCUSSION

Sourced from the of observations and investigation of the availability of learning devices at SMK Negeri 1 Tebing Tinggi City, it shows that weaknesses are still found in the learning tools used by teachers which indirectly contribute to the low creative thinking ability of students. From the results of the initial test analysis of the creative thinking ability and *self-efficacy* of students of SMK Negeri 1 Tebing Tinggi City, it tends to be seen that the student's creative thinking ability and *self-efficacy* are still moderately low. From the aftereffects of an interview with one of the mathematics teachers of SMK Negeri 1 Tebing Tinggi City, it is also known that there are still many students who have not achieved the KKM score (75) in the previous semester's mathematics exam. The teacher in question also said that some students seem to be less interested in learning mathematics. This can be seen when in the process of teaching and learning in the classroom, students seem bored and do not try to understand the teacher's explanation in front of the class, thus affecting student learning outcomes. The premise of the penyusunan test is the examination of errands and the investigation of ideas illuminated in the particular of learning goals. The test in question is a test of the ability to think creatively on the material of rows and sequences. The creative thinking ability test consists of 4 questions in the form of a description. The time allotted to complete the creative thinking ability test is 60 minutes. The learning media prepared include Learning Implementation Plan (RPP), Student Worksheets, and Student Books.

The results of the format selection in this study were adjusted to the 2013 curriculum. The format for student books or modules is adjusted to the rules of the National Standards Board for Education (BSNP), which explains that books must meet the feasibility of content, feasibility of presentation, feasibility of language and feasibility of graphics. The LKPD format is made in color so that students will be interested and motivated to learn while the format of the creative of thinking skill test refers to indicators of students' creative thinking ability. All learning tools are adapted to the *Open-Ended* approach learning model in order to become a unit and then it is hoped that its application will affect working on the creative thinking ability of students of SMK Negeri 1 Tebing Tinggi City. The initial design in this study produced a learning implementation plan (RPP) for 4 meetings, student books and LKPD for each meeting,

a test of mathematical creative thinking ability. The defining and design stages resulted in the initial design of a learning tool called *draft I*. The first phase in the development stage is to validate *draft I* to experts and then field trials are carried out. The expert appraisal incorporates content approval that incorporates all learning instruments that have been created at the draft I design stage, resulting in a *draft II* that is feasible to use. The validation results of experts are utilized as a reason for reexamining and refining learning tool and instruments.

Analysis of Learning Device Validation Results by Experts

The description of the validation and revision results of the *hypercontent* assisted learning tools From the result of data analysis was observed that the normal all out legitimacy of learning tool was at intervals: $4 \leq Va < 5$. Based on the criteria for validity, it can be said that the learning tools developed are "Valid". After the learning media developed has met the criteria for validity (*draft II*), the research continues to the *implementation* stage. Learning media in the form of *draft II* and all learning tools were tested at the research site, namely class X SMK Negeri 1 Tebing Tinggi City which is hereinafter referred to as trial I. If it has reached the criteria for research success, then the research is ended. However, if it has not been achieved, then the research continues to trial II after improvements are made. The research is declared complete if all predetermined success indicators are achieved.

Description of Validity of Trial Learning Tools 1

The assessment of experts has been explained earlier in the *development* stage regarding the validation results of the validators, where the results showed that the learning tools developed were declared valid with an average value of 4.48 (the category "valid"). Based on this analysis, it can be said that the developed learning tools are valid and ready to be used in learning. Practicality Description of Trial Learning Tools 1. The average observation score for the implementation of learning with learning tools with an *open-ended* approach using *hypercontent* developed in trial I was in the category of "Poorly Implemented". This score insufficient of the success criteria practicality of learning tools implementation. Description about the effectiveness of Trial Learning Device 1

The description of the results of student's creative of thinking competence in trial I is shown in table 2:

Table Description of the outcome of the Competence to think creatively in Trial I

Information	Initial Test of Student's Creative Thinking Competence	Final Test of Student's Creative Thinking Competence
Top Rated	75	81,25
Lowest Value	43,75	50
Average	55,83	65,00

Moreover, the result of traditional fulfillment of student's creative thinking competence to reason in Trial Learning Tools 1 should be visible in table 3 underneath: From the analysis of the results of trial I, researchers found several weaknesses that must be corrected in order for this study to produce learning tools that meet all valid, practical, and effective criteria. After the revision was completed, the trial II using learning tools (*draft II*) is carried out. The average observation score for the implementation of learning with learning tools established on the Open-Ended approach using *hypercontent* developed got "Well Done" the category with a

score of 3.87. This score has reached the criteria for successfully learning a tool's practicality in the implementation of learning.

Discussion

Based on the validation outcome of tools of learning based on the Open-Ended approach using the developed hypercontent, it was obtained that the mathematics learning tools developed were declared valid or in category validity had a good degree. Moreover, the validation outcome of the learning implementation plan (RPP), student worksheets (LKPD), Student module (MS) student creative of thinking competence tests and student self-efficacy questionnaires are also valid. This shows that learning tools based on the Open-Ended approach using hypercontent developed along with RPP, LKPD, MS, student creative thinking competence tests and student self-efficacy questionnaires have met the criteria for validity.

In view of the consequences of the evaluation of specialists (validators), all validators express that the media merits utilizing (substantial) with a slight modification. Then, at that point, through the perception sheet for the execution of picking up utilizing learning apparatuses in light of the Open-Ended approach utilizing hypercontent created which was given to a spectator at every preliminary gathering I and II, the outcomes were gotten that the perception score of learning execution didn't arrived at the measures in preliminary I, the typical score in preliminary I was 2.52 with the classification "Ineffectively Carried Out". Meanwhile, in trial II, the average score was 3.87 with the category "Well Done". This score sufficient of the success criteria practicality of learning tools implementation. Hence, it tends to reasoned that learning tools based on the Open-Ended approach using hypercontent developed have met practicality indicators.

In view of the result of examination in preliminary I and II, it was gained that understudy's creative thinking competence had reached the criteria for a classical completion settlement. The achievement of the final test of the student's creative competence in my experiment is 40% by the number of 13 students who are fully stated in my test of learning applications based on Open-Ended approach using developed hypercontent that insufficient of the success for secret closure (>80%). Nonetheless, in try ii, the accomplishment of the last trial of understudy imaginative competence to reason has met the rules determined from 87.50% with a sum of 13 understudies so complete that one might say that learning instruments in view of Open-Ended approach utilizing created hypercontent have met the models for viability in parts of understudy innovative competence to reason.

In view of the result of the examination of understudy reaction result that had been made sense of before, it was acquired that in preliminary I and preliminary II, understudies felt keen on the learning apparatus created. This should be visible from the typical score of understudy reactions showing interest in learning with the learning media created. Based on the understudy reaction poll score in preliminary I of 3.67 with an intrigued classification and in preliminary II of 3.87 with an intrigued class. So it very well may be inferred that from the understudy's reaction to learning instruments in view of the Open-Ended approach utilizing hypercontent which is grown actually.

Based on analysis of students' creative thinking competence tests in trials I and II, it shows that there is an expansion in students' creative thinking competence. Based on the benefit average figures, it is found that in congregations I there is an increased in student creative thinking competence with a "low" value with a value of 0.22 ($n\text{-gain} < 0.3$) and in congregation II there score increased by "medium" criteria with a value of 0.39 (0.3 So it may be concluded that

learning based on an Open-Ended approach using developed hypercontent may enhance a student's creative thinking skills.

In light of the aftereffects of information examination, it was obtained that the data group in this study was normally distributed and homogeneous, so that the significance value could then be analyzed using an independent t-test. Obtained from the outcome of the independent t-test that the sig value of 2 tailed is 0.001 which means it is smaller than 0.05 and the value of the calculated t is obtained by 3.970 or greater than the table t of 2.048 which means that H_0 is rejected, so it can be concluded that the average value of students' creative thinking competence using the development of learning tools based on the Open-Ended approach using hypercontent in trial class II is higher than trial class I, and is declared significant.

Based on the outcome of the investigation of student *self-efficacy* questionnaire data in trials I and II, it showed that student *self-efficacy* increased by 5.61. The increase in *student self-efficacy* is seen from the average results of *the self-efficacy* questionnaire filled by students. From the results of the study, students' interest is very high in learning mathematics using learning media, so this has an impact on increasing student self-efficacy, which then also has an impact on the results of students' creative thinking competence tests.

CONCLUSIONS AND SUGGESTIONS

Based on the results of the in this study, several conclusions were stated as follows:

1. Learning tools based on an Open-Ended approach using hypercontent developed meet vali, practical, and effective criteria
2. The improvement of student's creative of thinking competence and self-efficacy is seen from the normalized gain index. It was acquired that the improvement of creative thinking competence in trial I occurred an increase in scores with "low" criteria and in trial II there was an increase in scores with "moderate" criteria, while the increase in student self-efficacy was seen from the increase in the average score of student self-efficacy results from trial I to trial II.

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