ATLANTIS PRESS

Advances in Social Science, Education and Humanities Research, volume 320

1st International Conference on Social Knowledge Sciences and Education (ICSKSE 2018)

A PRELIMINARY RESEARCH TO DEVELOP 21th CENTURY WORKSHEET

1st Yuli Ifana Sari
Universitas Kanjuruhan Malang
Malang, Indonesia
ifana@unikama.ac.id

2nd Budi Handoyo
Universitas Negeri Malang
Malang, Indonesia
budi.handoyo.fis@um.ac.id

***Abstract*— Nowadays, the life of the world requires education graduates who master the competences of the 21st-century skills. These skills include a critical thinking, creative thinking, problem-solving, collaborative, literacy, and information technology. In order to master the 21st century skills are required a student worksheet that involve them to cultivate their ability and capacity in high order thinking skills. The results of the study showed that student worksheet that was used in schools were still oriented to low-thinking skills. The purpose of this research is to develop a worksheet based on the 21st century skills. The student worksheets are do not only focus on the concept mastery and comprehension but also build knowledge, skill, and attitude according to the 21st-century demands. The design of this research was the ADDIE model, includs analysis, design, develop, implementation, and evaluation. Research subjects were limited high school students and as an expert validator Lecturer development of teaching materials who have an experienced at least 5 years. Data were collected with an open questionnaire for validators and closed questionnaires for students. The analysis was done descriptively. The results of the development show that there are seven steps to developing student worksheet based on the 21st-century skills competence. The six steps are: (1) determine the competence or goal to be achieved; (2) describe competencies into high-level thinking indicators, (3) identify the 21st century skills need to be nurtured; (4) describes selected 21st century skills as achievable indicators; (5) integrating curriculum competency indicators with 21st century skills indicators; (6) formulate work steps to achieve the learning objectives; (7) to write down the whole work steps of the worksheet.**

Keywords—Worksheet; Twenty-century skills.

I. INTRODUCTION

LKM is important for increasing high order thinking skill. This is suitable with the result of the research [1] explained that "the development of LKM' s orientation on scientific approach to grow up Higher Order Thinking skill (HOT)." The development of LKM and inquiry learning model is guided for help in increasing critical thinking skill and mastering student concept [2]. Critical thinking skill is very needed by the student because it will be basic capital to understand all, such as understanding on science discipline. According to [3] explained that "the basic of outdoor learning is project that is developed with using LKM that can be increase critical creative skill and train the student to cooperate with their group."

Geography is one of the sciences that studies about nature and human and also the phenomenon that happen including series process consist of observation, make the hypothesis, experiment, and data evaluation base on scientific attitude. It means that learning geography not aks student just for mastering fact, concept, and principal only, but student is hoped able to mastering all by finding process that leads on student skill of 21st century same with [4] stated that "education is not only focus on mastering the material, but also on mastering higher thingking skill." Using worksheet (similar with student worksheet/*Lembar Kerja Mahasiswa* – LKM) is the basic skill of 21st century is able to increase scientfic thingking to solve the problem in learning. This is supported by [5] stated that "The following student in the learning process with LKM media is able to increase optimally study activity in order to be able to increase study result."

Life in the 21st century ask people to mastering all skill. So, it is hoped education can prepare the student to master the variety skill in order to be successful people in their life. Skills in the 21st century have relevance with 4 pillar life that are learning to know, learning to do, learning to be, dan learning to live together. All of that principles have specific skill that is needed to use in the learning activity, such as critical thinking skill, solving problem, metacognition, comunication skill, colaboration, inovation and creation, literacy information, and other skills. In line with that, Kemdikbud stated that " learning 21st century paradigm is stressed on student skill in finding sources, find problems, analytic thinking and corperation and colaboration in solving problem." [6].

Learning is focused on how the student can excercise on higher order thinking in learning such as observe the problem, get experience, so can find and understand the concept. So, LKM is one of the alternative media to increase skill 21st century. "LKM is part of media to study that consist of the summary and guiding to do learning task that must be done by students, that focus on basic competency that must be reached" [7]. One of the effort to reach the learning purpose 21st century that increase of thinking skill students to developing the LKM that suitable with the 21st century. Next, [8] concluded that "the result of LKM development online basically is able to increase critical creative skill and increase the result study of the students."

The principal of LKM development that follow on skill 21st century such as 1) LKM is lead to encourage the students to find from other sources by literacy, 2) LKM is lead to encourage the students to be able to know the probelms (ask question), not only solve the problem (answer), 3) LKM is lead to train the students have analytical

thinking (take a decision) not think mechanism. 4) LKM is lead to the students on teh important of cooperte and collaboration insolving problem, and 5) the development of LKM interactive use video media that can open with “class on line” or developmen LKM with android media. The using internet as education media is so wide especially in the develop country, it is fact that shown with using LKM on line is the steps that must attention by the teacher on the 21st century. The demands in the 21st century explaine that the teacher and students must use technology information in learning process [8].

Based on the result about LKM that is used in learning. LKM that is used by teh students at this time just consist of the materials and exercises is not lead to LKM skill 21st century concept and just on understanding consept. This is suitable with observation result from [9] explained that "LKM that is used by the students in learning process is give much material so not encourage students to develop their thnking skill". If seen from the form it is also not interest because the picture in LKM is not colourfull. Next, [10] also stated her finding that is " in LKM is so not intersting, minimum of picture and information and not complete." The conclussion from the observation is LKM in each school is still convensional and less in develop the students character.

Scientific approach to curriculum 2013 teach the students to act as a scientist that think sistematically, logic, and critic in order to solve the problem use a certain method. Scientific method is different in solve problem in learning activity in convensional way. [11] stated that one of the factor that decide the success on learning implementation is the teacher quality in improve their experience, make learning planning that suitable with curiculum and teh future, and also mastering the material learning. Besides that, learning si focused the students that use LKM which the purooses is to the student can explore the data and motivate to critical thinking that will give the meaning not only onmaterial but also it can be include in problem and how to solve it.

Teaching proses skill in geography subject in the high school with student worksheet. Three component from the main aspect in developing student worksheet are mathematic, interaction social, and direct activity [12]. Mathemathic logic aspect show that thinking skill conceptually and it is definised as logical thinking skill, and creative, skill for analyse and solve the problem as component in science skill. The construction information and fact from the various resources is means for give understand to the students that mastering concept is not only get from scientific activity based on empiric evidences that have operational character [13].

The purposes of this research is to develop a conceptual model in developing LKM base on skill 21st century in increasing critical thinking skill, creaative, solving problem, literacy information, collaboration base on IT. LKM is choosen as the subject development because LKM ini often use as one of material in learnin. Since use curriculum 2013 that use scientific approach in the learning, LKM as material that must use by the teacher in the implementation of practicing curriculum 2013.

II. METHOD

Research planning in LKM improvement base on skill 21st century use ADDIE model that consist of 5 steps that are: analyze, design, develop, implementation, dan evaluation. (1) analyze step is focus on LKM Geography analysis that is used in SMA: (2) Design step is make learnig purposes that include curriculum with do material analysis, students charachetr, and skill 21st century; (3) Develop steps that is started with making conceptual model fom LKM base on skill 21st century. That model is validate by Dr. Budi Handoyo, M. Pd: (4) implement steps that is use conceptual models with test small group on 9 students of semester 2 year academic 2107 Geography Education Department The University of Kanjuruhan Malang.

Test trying conceptual model LKM is done to know the practical level and effectivity in LKM learning development. The result of evaluation on angket students is used to know the development efficiency LKM base on skill 21st century. Trying test is done on the students in the first semster Geography Education department The University of Kanjuruhan Malang. (5) Evaluate steps is evaluate the quality conceptual model that have been implemented and used to know the effectivity LKM in learning. If the precentage queistionare evaluation more than 75% so it can be said thta the student give positive response to LKM so fullfill practical aspect. But, if the percentage less than 75% so teh response of the students is said that negative so it need for revise with attention the comment from trying test subject.

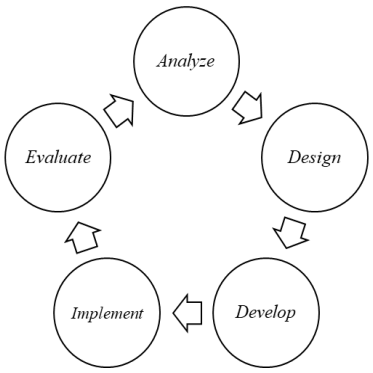

Fig. 1. Steps of ADDIE model in development LKM. (*Sources: Branch, 2009*)

III. FINDING AND DISCUSSION

A. Conceptual Model

The purposes of conceptual model is for delivered basic principals and basic function from their system. Conceptual model is improved to give interpretasi system easily to be understod by the using model. Based on the idea above in the introduction so it is made conceptual design LKM based on 21st century skill that become basic in learning activity in the school. The development of LKM conceptual model is described here:

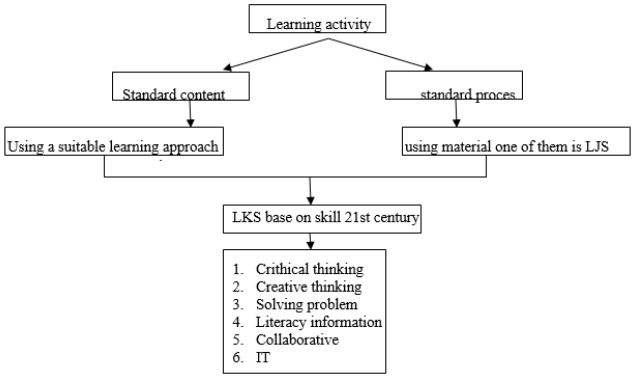

Fig. 2. Conceptual Model LKM Skill Basic of 21st Century.

B. Steps on Making Learning Material

The steps on making learning material to be material of LKM base on skill 21st century such as:
(1) Decide competency or purpose that want to be reached;
(2) Describe competency becomes thinking higher indicator;
(3) Identify skill 21st century that is needed to be improved;
(4) Explaine skill 21st century is chooses as indicator that can be reached;
(5) Integrate curriculum competency indicator with indicator skill 21st century;
(6) Formulate work steps to reach the learning purposes; and
(7) To write all steps on worksheet.

C. Result of Field Test

From the test conceptual model LKM skill basic 21 century on 9 students semester 2 on 2017 academic years Geography Education Department The Kanjuruhan University of Malang is gotten queistionare value such as:

TABLE I. SCORE PRESENTATION OF A QUEISTIONARE STUDENT TEST

No	Subject trying test	P(%)
1	S1	78%
2	S2	80%
3	S3	75%
4	S4	85%
5	S5	80%
6	S6	77%
7	S7	80%
8	S8	85%
9	S9	80%
Average		**80%**

Based on the queistionare result, value presentation of 9 students more than 75% and average value students queistionare show that presentase 80% because presentase queistionare value students more than or same with 75% so it can be said that students give positive respons to the conceptual LKM model base on skill 21st century.

The development of conceptual model LKM base on skill 21st century this is one of the effort to increase the material and media in learning on geography subject especially on litosfer materia. This is done with the hope that it can encourage the students study more ready face the challenge on 21st century. Conceptual model LKM base on skill 21st century is stacking with use steps that lead to student skill in critical thinking, creative thinking, problem solving, collaborative, literacy, and information technology. The result of the research of [14] shown that "The effectivity of LKM that stacking based on the steps that lead critical thinking skill can increase the students skill in face 21st century."

Conceptual model LKM that is developed on this development based on the steps that lead to student skill that need 21st century. Conceptual model and steps development LKM material base on skill 21 century is tested on small group there are 9 students on the second semester academic year 2017 Geography education the university of kanjuruhan Malang with the percentage 80%. According to[15], LKM is stated practical if LKM get positive response from the students that can be seen from the queistionare score. If the precentage of queistionare score more tha 75% it can be said that the student give positive response to LKM so it will full fill practical aspect. Practical aspect fom the student response show that development of conceptual model LKM based on 21st century can be use as guidance in learning in th future.

Making material of LKM is lead to mastering skill 21st century. Where on 21st century the students is prosecuted to have competency with higher order thingking that are analyze (C4), evaluation (C5), and create (C6). Because of that, on the second poin in making LKM that is describe competency becomes indicators critical higher order thinking. Next step is identify 21st century skill that need improved conist of critical thinking, creative thinking, problem solving, collaborative, literacy, dan information technology. From skill 21st century that is choosen will use as indicator that will reached in learning. The teacher is challenged to integrated indicator curriculum competency with indicator skill 221 century in making LKM that is suitable with 21 century demands.

Integration curriculum indicators with skill indicataor 21st century have the purposes to formulate work steps to reach the purpose on learning 21st century. This is suitable with [16] stated that "there are some aspect interest in student digital and their consideration about industrial framework 4.0 that is introduction the new thing in learning method and learning that encourage their digital, and introduce interaction intellegent among various actor there." The result of [16] can be concluded that digital attitude studentin learning need to be increased in face 4.0 industrial. He teacher in learnin 21 st century must have skill to lead the students to study critic, creative, solve problem, collaboration,literacy, and technology information.

IV. CONCLUSION

There are seven steps to improve the worksheed student based on skill competency 21st century. Seven steps are : (1) make certain abaout competency or the purpose that want to be reached (2) describe the competency becomes higher thinking indicator (3) identifed skill 21st century that need for increased (4) explaine skill 21st century as indicator that can be reached (5) make integration on curriculum indicator competency with skill indicator 21st century (6) make steps work to reach the learning purposes (7) to write all steps of worksheet.

The average prsentation of the queistionare value is 80% so it can be said that student give positive response to conseptual modal LKM that is developed.

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