Implementation of Game-Based Learning in Elementary School: A Content-Analysis Study

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Abstract: This study aims to describe the game models that are used in learning and the effects of learning in elementary school in various bachelor degree theses of elementary school major in State University of Malang. This study uses a qualitative research approach with content-analysis based literature reviews. The target of this research is the thesis of bachelor degree students stored in the library of State University of Malang. Data collection techniques use documentation. Data were analyzed qualitatively by using a meta-analysis that focused on the content of the thesis conducted with steps: description, reduction, and interpretation.

Keywords: meta-analysis, elementary school learning, game-based learning

I. INTRODUCTION

This research is based on the background of the problem that the thesis of bachelor degree students at State University of Malang stored in the library tends to be underutilized optimally. Very few students use the thesis as a reference in the implementation of lectures and the preparation of assignments in lectures. Even some students stated that since entering college until graduating only a few times entered the library. Or, many students visit the library only when there are assignments from lecturers who are deliberately directed to find resources in the library. In addition, many lecturers also do not direct students to visit the library.

Based on the observations of researchers and narrative of the PGSD UM library staff, it was rare for lecturers to borrow books or visit the library. Interest in students major at elementary school education and lecturers for visiting, reading books, or borrowing books or scientific works in the library is very low. The low interest in reading books and scientific works in the library is, of course, very unfortunate, because based on preliminary studies conducted, many qualified but less theses can be utilized both by students and lecturers.

Thesis is a scientific paper in the form of exposure to research results of undergraduate students who discuss a problem or phenomenon in a particular field of science by using applicable rules. When writing a thesis, students will be able to integrate their knowledge and skills in understanding, analyzing, describing, and explaining problems related to the scientific field they take.

Thesis is a requirement for obtaining undergraduate (S1) status at every university in Indonesia. In thesis writing, students are guided by two mentors who are lecturers in universities [1]. Thesis results that have been tested by the board of examiners will be stored in the college library. After going through a good coaching process, the thesis is the result of research for beginner a researcher which is very unfortunate if it is only stored in the library and underutilized optimally.

Based on the initial studies that the researchers did, there were several thesis students who specifically discussed playing and games for thematic learning in elementary school for the achievement of various student competencies. Researchers are interested in game-based learning because the world of elementary school children is the world of play. Through play, various learners" competencies can be developed, including the ability to communicate, collaborate, motoric-kinesthetic, spatial, cognitive, interpersonal, intrapersonal, and others [2].

Children"s games that are now being developed and performed by children tend to be individualized games, such as games on gadgets. Group games are becoming obsolete, so individualistic and selfish characters are increasingly visible in the world of children. Researchers view learning using games that are social in nature need to be revived by utilizing the results of research on the use of games and playing in the learning process [3].

Game activities are still poorly understood by parents and the community, even lecturers and students. Playing is considered an activity that is less useful and a waste of time. Whereas in many neighborhoods, games are deliberately designed by teachers, parents or companies for children"s education. Players also motivated to learn more, because the situation are help them to enjoy the process within the game [3].

Game tools can also be developed from nature and the surrounding environment that can support the child"s development process. Thus the purpose of this study is to describe game models that are used in learning and the effects of learning in elementary school in various theses of bachelor degree of elementary school teacher education major in State University of Malang.

II. METHODS

This study uses a qualitative research approach with content-analysis based literature reviews [4]. The research will focus on the content of the thesis produced by bachelor degree students about game-based learning in elementary school. The game models that have been produced will be described in the steps of playing and learning. Likewise learning effects, both direct effects and the indirect effects.

After that the researcher will conduct an analysis with meta-analysis on the relationship between the implementation of various symptoms of the implementation of the game models used for learning in elementary school with the direct effects and the accompanying effects. The results of this meta-synthesis will produce comprehensive results about the implementation of game-based thematic learning in elementary schools.

III. RESULT AND DISCUSSION

Based on the results of a study of several theses written by bachelor degree students major in elementary school teacher education, found several theses that used class action research and development design. All games used in learning focus on group games so that the game is also developed to develop social aspects of students. Some of the games found in the thesis at State University of Malang library within the period of 2011-2016 include.

Game model based on the Dienes theory to improve understanding of the concept of multiplication in class II students of SDN Dadaprejo 01 Batu [5]. This game has five stages, namely the free paly stage using *dakon* / pictorial card. Then the game stage by using the rules of the game, which is followed by the stages of searching for communities. The fourth stage is the stage of representation and ends with the symbolization stage. This research is a classroom action research. The results of the study showed that the understanding of the concept of multiplication of Class IIA students after being given action with a game based on Dienes theory increased by 33% after cycle I, and 28% in cycle II.

Game using number band used to improve mathematics learning outcomes in fifth grade students of elementary school of NU Hasanuddin Dilem 02 Kepanjen [6]. This game uses number bands, integer cards and cars as displays for integers. This game uses the rules of the car facing right showing a positive integer, while if facing left shows a negative integer. This research is a classroom action research. The results of the study showed that student learning activities increased and student learning outcomes increased.

Snake and ladder games used as a medium to improve the activities and the results of Class V social studies learning at elementary school of Sawojajar 1 in Malang city [7]. This research is a classroom action research. The results showed, after the teacher showed snake ladder media, students began to be interested and excited in playing the game. Some students were confused about the use of snakes and ladders, but they were enthusiastic about learning to use snakes and ladders. Snakes and ladders games can increase student learning activities (initial 44.23% and after learning using snakes and ladders games it increases to 80.77%). Students better understand the material presented by answering the questions given in the snake and ladder game. Increased learning activities also have an impact on improving learning outcomes (the average initial learning result is 77.84 and increases to 85.24 at the end of learning).

Educational monopoly media developed for learning integer mathematics in grade IV elementary school [8]. This game is called educational monopoly because it has a game step like a monopoly, but the card used contains questions for students to do. The results showed that students could not be left completely independent. The teacher needs to act as a facilitator to direct students to instructions that are poorly understood, check the way students play, and provide opportunities for students to ask questions that are not yet understood. Student learning outcomes when pre-test and post-test in educational monopoly games show an increase in average learning outcomes.

The monopoly game media used to improve the quality and outcomes of social studies in class V state elementary school of Gadang 2 Malang [9]. This research is a classroom action research. The results showed that the quality of learning had increased from 96.46 at cyclical 1 to 99.38 in cycle 2. The average value of learning outcomes in cycle 1 and cycle 2 increased from 64.74 to 79.44 with an increase of 14.7. From the cognitive aspect students are able to remember learning material and practice concentration. From the affective aspect, the interaction and motivation of student increases in social studies learning, students can interact between students, and students" learning motivation increases.

The Quick and Fun game model developed on "pantun" learning for fourth grade students of state elementary school of Bedali 01, Lawang District, Malang Regency [10]. The results showed that the products produced in this research and development were in the form of Quick and Fun game models. Based on the results of the development, overall it can be concluded that the Quick and Fun game model that was developed was theoretically valid which resulted in a score of 84% by the learning model expert and a score of 93% by Indonesian language material experts.

Quick and Fun game products can be applied in the learning process of writing "pantun" which is indicated by the results of user validation reaching a score of 93%. In terms of cognitive this game can develop students" thinking. In terms of affective, students feel happy and interested, students can cooperate with friends, and students can interact between group members. From the psychomotor aspect, students can perform limb movements, restore lost power due to being absorbed by the burden of learning and situation. From the competitive aspect, students compete of speed, agility and intelligence.

A quartet card game developed as a social science learning media for buying and selling for third grade students of second semester at elementary schools of cluster II Kedungkandang, Malang city

[11]. This quartet card is a modified card related to the topics discussed in the buying and selling material. The results of the study show that from cognitive aspects, students are easy in learning social studies material for buying and selling. From the affective aspect, student interest is shown by increasing student interest in learning. Snakes and ladder games developed on mathematics learning in fractional material in grade V elementary school [12].

This media was developed with a modification of the regulation that each plot contains questions that must be answered. If wrong, then the player must return to the previous plot. If the player advances to the staircase, the player is allowed to go up if he answers the question correctly, but if the answer is wrong then the player remains in the plot and is not upgraded. If the player advances to the snake plot, the player must go down if he answers the question incorrectly, but if the answer is correct then the player remains in the plot and does not have to go down. The results of the development show that the media of snakes and ladders games are validated with an average percentage of media experts 96.52% with very valid categories.

Based on the average percentage of material experts 78.64% with very valid categories, so it can be used in learning. Judging from the average percentage of teacher assessment 97.91% and from the average student assessment when the small group test was 92.8% and the field test 94.52% of teacher and student assessment can be considered very effective and can be used during learning.

The impact of the use of media is, among other things, students like to use media, enthusiasm for learning, easy to understand learning material, able to remember learning material, and not feel bored when learning. From the cognitive aspect this game is able to facilitate learning goals. Viewed from the affective aspect, students are able to balance emotions and attitudes while learning. Based on attention aspects, students are interested and pay attention when learning. And from the compensatory aspect, students are able to understand and remember material.

A classroom action research conducted by applying the STAD model with the "KHT" quiz game in social studies learning to increase the participation of class V students of state elementary school of Gedogkulon 01 Malang regency [13]. Quizzes are carried out using whiteboards, chalk and erasers. Players are asked to line up and write down the answers on each board that has been held. The teacher will give questions related to the learning material that has been read.

The results showed that in the first cycle of meeting 1 there were still some students who did not participate in the discussion, did not answer and made questions. In the first cycle of meeting 2, students have started to discuss, answer and make questions. Likewise in the second cycle of meeting 1. In the second cycle of meeting 2 students have been able to discuss, answer and make questions. This is evidenced by the increase in the average participation rate from 61.59 in the first cycle to 77.10 in the second cycle.

Application of role playing model to improve social studies learning outcomes on class III of buying and selling activities has been done at elementary school of Mulyoagung 02 Dau, Malang regency [14]. This classroom action research was developed based on the material learned by students who played a role in the teacher''s prepared storyline. The results of the study indicate that there are several aspects of the development of student learning processes. Visual aspects show the development of abilities in reading scenarios, observing role plays.

Oral aspects appear in the ability of students to ask questions, answer questions, and issue opinions. Motor aspects appear in playing role playing. And mental aspects appear when students remember the contents of the scenario and analyze the contents of the role play. Based on the lessons that have been presented, students must follow active learning when students learn while playing. Students work with friends. Playing activities can provide space for developing gross motor skills.

Based on the results of the studies that have been analyzed, it was found that the games used in learning in elementary schools focused on the game to increase student activity or learning outcomes; and games that were deliberately developed to create a better learning atmosphere in the classroom. A game - based learning approach can be seen as an effective way in facilitating students'' 21st century skill development [15]. Thus the development on game design and implementation related to educational in general should be done in the next generation. Games that improve students'' social skills also needed to apply at educational process as they have indirect effect for students'' affective and psychomotor aspect.

On the other hand, researches on applying digital games in education have been exist on recent years. The existing analyses of the simulation games in science education for 86 college students in game-based learning activities utilize a role-playing simulation game [16]. The results identify different levels of learners affected by their learning behavior patterns. In this research, learners with higher levels of flow demonstrated a more in-depth reflective process. Another research sees educational computer games as a tool to develop mathematical thinking [17]. Children are taught to create computer game and how it can affect their mathematical thinking. It found that the process of computer game making helped them to activate their mathematical reflection.

The study shows that each game-based learning has certain steps or syntax to do while learning through playing. It can be seen that all the games performed have a positive effect on students'' competencies, whether in cognitive, affective, and psychomotor aspect.

For the next game designer for educational purpose, various games included in this study can be a theoretical framework to improve students'' competencies in elementary school education. The computer or online based games can also be used as a main tool or media for improve students'' competencies in digital era.

IV. CONCLUSION AND SUGGESTION

A. Conclusion

Each game begins with: (1) the preparation stage: (a) preparing the game media; (b) pray before starting the game; (c) students listen to explanations of learning objectives; (d) students listen to the teacher"s explanation of the rules of play; (e) the teacher divides the playing team; (2) play stage: (a) each game has varied steps and students play according to the steps of each game; (b) students compete with other groups in the context of mastering the substance of the subject matter including in the form of quizzes, question and answer, discussion, simulation (c) students are given teacher reinforcement on mastery of the content of the subject matter, (d) determination of winners and awarding rewards; and (3) the closing phase: (a) students together with the teacher reflect together on the game that has been done; (b) moral messages and praying. All game models examined in this study have an impact on the improvement of the aspects of religion, cognitive, social, language, visual, logic, and motoric.

B. Suggestion

The results of this study suggest elementary teachers use game models in learning in elementary school; the principal socializes the results of this study to elementary school teachers; educational offices at city or district should conduct training for elementary teachers about the use of game models in the learning process and for further researchers, this research can be used as reference material for research on elementary school games.

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