Collaboration of Traditional Games with Science-Based Inquiry and Scientific Approach

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Abstract—In the era of technology, traditional games has been largely abandoned by the nation's generation. Learners emphasizes technology in learning, so forget about the other aspects of his life, especially his social life. Learning should be returned to the humanitarian aspects and the emphasis on the development of creativity, taste, and imagination to become the generation that responds to the environment. Through the collaboration of traditional games with science-based inquiry and scientific approach can equip learners to learn science in a free and fun.

Keywords: traditional games, science, inquiry, scientific

I. INTRODUCTION

Study in Tamansiswa use the among system, which puts children at the center of the educational process and tutors as mentors (Ki Hajar Dewantara, 1977: 12). Children as human nature independent so as to educate given outer and inner freedom to grow and develop. The learning will make the child actively stimulated innovation and increase their knowledge so that it can be a useful man for himself and the community. However, problems are often a constraint by teachers in teaching science is the lack of learning resources available in schools. Teachers generally only know the learning resources are library, internet and the books. In fact, all were used and specific objects including learning resources. Aan Hasanah (2012: 151) explains that learning resources are all over the place or the environment, objects, materials, books, events / facts that is happening and those that contain the information can be used as a vehicle for students to make the process of behavior change. These problems lead to learning science becomes dry activity. This resulted in the science lesson are not meaningful and students think science lessons are very serious, sinister and makes boring. The learning makes students feel fettered and burdened. The learning condition is contrary to science as knowledge gained through activities or laboratory experiments. In addition, science teaching will be more easily understood by the students' learning through concrete objects.

This paper explains why and how the culture (especially the traditional game) as a source of learning can be considered as an alternative to learning science. It analyzes the limitations of traditional games in teaching science and identify how traditional games can be more practical and effective approach. Indonesian traditional games in today's increasingly faded, this is because the development of technology. Kids who are interested in video games, and games android so rarely interact with their friends. This time, Indonesian traditional games rarely used by students/current generation. Whereas traditional game requires no hardware or software equipment to play it as well as the tools readily available. The traditional game is very simple and easy enough to follow. The ambiance stiffness in socializing children will soon melt and familiarity will be easily obtained after this game. In learning science, culture-based learning resources to provide an environment of learning science interesting and fun for students. Teachers and students made possible interact and participate actively in the learning culture based owned and known. Teachers and students also feel the intimacy and acknowledged.

II. DISCUSSION

The local culture especially traditional games get less attention from the teacher to be applied in their science lessons. This is the challenge to be able to integrate the local culture in the form of traditional games into science teaching so that students can learn science by encouraging curiosity with interesting and fun atmosphere. Teacher roles in directing potential students to explore diverse cultures, especially the traditional game is already known, as well as developing the culture. The interaction of teachers and students will accommodate the creation of meaning from knowledge gained in these subjects at school by each individual.
A. Traditional Games as a learning resource

According Anggani Sudono (2000: 11), seen from the development of the child to learn, it takes learning resources which can support factors of cognitive, psychomotor and affective. Management Games traditional or folk games is clear that all of these games contain the movements of the body, hands, feet and other body to interact with a group of playmates. Learn while playing can be done in science learning. Aan Hasanah (2012: 76) states that learning is a process of mental and emotional or thinking and feeling. Through the game, students can develop their potential in cognitive, psychomotor and affective. Alexon (2010: 14) argues that learning that integrates the local culture in the learning process, not only can facilitate the improvement of student learning outcomes in certain subjects, but also students’ appreciation of the local culture. Daryanto and Muljo Rahardjo (2012: 164) adds that the culture-based learning is not just transferring or conveying culture or cultural manifestation but use culture to make students capable of creating meaning, through the boundaries of imagination and creativity to achieve a deep understanding of the material being studied.

The traditional game as one of the living culture and is integrated with the students and community of local culture is a theme that can be developed in the learning process. The students are doing a game in the field of education should be to collect and amplify the information from different sources, and thoroughly review the subject matter. Teachers should guide the students and help students in integrating traditional game with the material being taught. Teachers give students the chance to discuss and exchange opinions with their friends. This process aims to improve their memory retention, engagement, editing skills, and knowledge concerning the concept of the IPA. This process creates a traditional game in science learning engages students in activities where knowledge is the realization of a kontekualisasi and learning objectives.

Media and other learning resources used by teachers to provide assistance in the form of student conduct exploration observing (observing), attributing the phenomenon (associating), ask or formulate the problem (questioning), and conduct experiments (experimenting) or further observations. Learning resources in the form of culture can use the traditional game. The traditional games include egrang, permainan bola bekel, lompat tali, layangan, gangsing, cublak-cublak suweng, ular naga, klontengan, gundu/leker, patok lele, benteng-bentengan, kasti, gobak sodor, engklek, congklak, tarik tumbang, bedil bamboo, balap karung, bakiak, rorodaan, ketapel, yoyo and so on. Such games can be developed as a source of learning science on draft upward lift force on the fluid in the form of gas that is by using a kite. Kite on the game can also be associated with the measurement at the time of making kites, determine the wind direction, energy and so forth.

B. Implementation of traditional games in Inquiry-based science learning and Scientific Approach

The traditional game presents events or activities of interest to nurture the curiosity of the students so that raises questions "what, why and how” of the events that occur in the game. In a further development into a "what if ..." as a form of exploration of the students against the experienced (Wenno, 2008. 61). Abdul Majid and Chaerul Rochman (2014: 143) adds that the ability of children to learn through experience, namely 1) the students involve themselves fully in new experiences; 2) students observe and think about the experience of various aspects; 3) students create concepts that integrate observations into sound theory; and 4) students using theory to solve problems and make decisions. Based on this, the science lesson should use a scientific approach through observe, ask, try, reason, and communicate reinforced by using the inquiry.

Three key steps in the development process of science (scientific method) is observed, inference (formulate explanations based on observations, including finding patterns, relationships, and make predictions), and communicate (Kemendikbud, 2014: 5). How to make use of culture as a source of learning? The value of culture as a source of learning depends on the skill to use it. Adrian Rustaman (1996: 5) explains that each learning resources should be used for specific purposes, namely: to help solve the problem, it can explain the concepts and principles of science, and increase the tendency of students to explore the natural surroundings.

Understanding of concepts in science must be obtained by the students actively use their skills by involving cultural process as a learning resource. With his own experience students will have the provision to seek and find the concept or principle. Students no longer learn science but learned through science. Teachers should encourage students to construct knowledge in his mind. In order to truly understand and can apply the knowledge, the students in learning to use traditional games should be encouraged to work to solve problems, find everything for himself, and has struggled with his ideas. This was confirmed from the results of research Wijaya, et al. (2011: 149) that “traditional Indonesian games can support the learning of linear measurement. The analysis of the teaching experiments showed that conflicts of fairness while playing the game could be used to help students to acquire the concept of a standard unit of measurement”. This shows that through the Indonesian traditional games can help students in getting the concept of the material in a fun way.

Based on the research results Astuti Wijayanti and Aris Munandar (2012) concluded a model to develop outdoor learning in the learning that can be described as follows:
Model development of outdoor learning can be applied to develop the traditional game in learning science. Model of traditional game development using learning resources local culture. Implementation of learning that integrates traditional games into learning science can be conducted inside and outside the classroom. The model that contains elements of the indicators of achievement or competencies, learning objectives and learning resources necessary to develop the local culture in preparation of lesson plan-based culture is described as follows:

1. **Competence achievement indicator** is used as a marker of achievement of basic competence is characterized by behavioral changes that can be measured which includes attitudes, knowledge, and skills. The learning objectives describe the process and expected learning outcomes achieved by learners in accordance with the basic competencies. Learning resources are references, objects and / or materials used for learning activities, in the form of print and electronic media, speakers, as well as the physical environment, natural, social, and cultural. Determination of learning resources based on standards of competence and basic competencies and subject matter, learning activities, and indicators of achievement of competencies. Learning resources using traditional games. To integrate traditional game with the science lesson to make it easier to understand the students by using worksheets. According Paidi (1999) mentoring students doing science process uses written guidelines (in the form of a practical example for worksheet) and guide oral teacher (introduction at the beginning of the event) and clarification (at the end of the activity), as well as guidance during the manufacturing process of experimental design and implementation, capable improving scientific skills of the students. Endang Wahyuningsih, Hantoro and Sifak Indana (2011: 31) adds that in order to improve scientific performance of students, it is recommended to use the inquiry worksheet challenging and intensive guidance in the application of science learning.

How to implement inquiry-based science teaching and scientific approach utilizing traditional games as a learning resource can be done with the following steps:

1. Analyze Content Standards are standards and basic competencies that pertain to the standard kompetansi each class graduates to develop their subject matter.
2. Develop a syllabus to be developed in the learning activities.
3. Analyzing the matter of integrity by referring to some sources this book to determine competence achievement indicator.
4. Choosing a traditional game which is suitable for use in learning.
5. Describe the subject matter became an essential matter of fact, the concept of principles and procedures that can be developed or explored through the neighborhood.
6. Develop indicators of achievement of competencies using improved operating verb of remembering up to a higher level and continued with the elaboration of the goal.
7. Based on the analysis of the essential matter of fact, the concept of principles and procedures to be developed into student activity or learning experience with outdoor learning.
8. Develop lesson plans through a variety of methods and models of learning as PAIKEM, contextual learning and cooperative learning as well by applying the scientific approach.
9. Make worksheet that leads to the concept of the material by connecting the activities performed in traditional games.
10. Make judgments based assessments to measure the success of a product, process, or judgment of other tasks.
11. Conduct learning according to plan and record weakness for further improvement.

Learning science that integrates traditional game with a scientific approach requires teachers to master standard implementation process, the traditional Indonesian games, scientific approach and process skills in inquiry learning implementation as the demands of the curriculum. The application of this learning can only be applied to SK-KD certain learning relevant to the learning resources in the form of Indonesia traditional games.
III. CONCLUSION

Learning science by using learning resources in the form of traditional games can be directed to develop students' ability to acquire knowledge and reintroducing the game to train the students' social skills. Learning resources in the form of traditional games will help those involved in the school and outside the school environment so as to create the atmosphere of the classroom or the learning process fun and helps improve the quality of education by not ignoring the elements that become embedded in the child.

REFERENCES