ELEMENTARY EDUCATION AS A BRIDGE TO CHANGE THE EARTH'S GOVERNANCE SYSTEM FOR THE FUTURE

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ABSTRACT
The sustainability research from Biemann has a center on collaborating on the earth system governance network based on five research challenges namely architecture, agency, adaptability, allocation, and accountability. Research in order to link the relationship between social and environmental sciences with the earth's governance system. To link this relationship, it must be started from elementary education in shaping the character of students so that in the future it can be minimized. The results of this research show that there are many things that can be done to form the character of students, one of which is a game. The game will contain environment and social learning by inserting a sense of responsibility, analyzing problem solving so that it will form a good character and can reduce the negative impact of changes in the earth's governance system.

Keywords: Elementary Education, Earth System Governance, Social and Environmental Sciences.

INTRODUCTION

In 2001, there are four programs in the world that always identify changes in the world environment. This research community believes that earth system operating outside of normal conditions and even human activity far exceeds natural variability (Biermann, 2007). So, this is a major challenge for policy makers in making decisions both from the biogeophysics cycle to the improvement in terms of political, legal, social and economic. Changes in the global environment will be difficult to stop (Rockstrom, et al., 2009). Therefore we must prepare for rapid changes and sustainable livelihoods if the earth's governance system affects livelihoods.

Researchers conducted further research from the 2007 Biemann research, which focused on the management of the earth system as an alternative to the development of the concept of earth system governance with five research challenges. Then, the sustainability of research conducted by Biemann et al., (2010) on a research framework that to answer previous research requires a management strategy to manage the earth system. One of the management strategies is to carry out major reforms in all fields that affect the governance of the earth system, for example in the field of international law, legitimacy in the Biemann et al., 2012 research. This objective integrates economically and socially with environmental sustainability. Finally, the latest research carried out by Biemann et al., (2019) is that there are many international calibration programs to discuss global change based on social

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science. This article critically reviews the Earth System Governance network experience and its integration and interaction with other programs. This research discusses a lot about the community, innovation and what strategies are used.

Therefore, the sustainability of this research from biermann will focus on collaboration to link elementary education character-forming relationships with the Earth Governance system with a qualitative approach that considers the five challenges. In Indonesia, there are still many basic learning standards, one of which is speaking politely. The learning is good, it’s just that the level of learning is too basic so character building will be slow. So, there needs to be innovation in learning renewal now, one of which is to use a game to attract students so that they are enthusiastic about learning. This game will shape the character of students by research (Lester, et al., 2013) with environmental principles and (Okada and Matsuda, 2015) with social principles. The hope is that this method will be useful for shaping the character of students that will have an impact in the future.

BUILD CHARACTER CARE FOR THE ENVIRONMENT IN ELEMENTARY EDUCATION

Environment education is based on four pillars of education (Simbolon, 2010), namely (1) (learning to know), (2) (learning to do), (3) (learning to live together), and (4) learning to be. The attitude of environmental concern is not only to prevent environmental damage but there are efforts to improve it. This showed by (1) working hard, (2) thinking ahead, (3) appreciating health, (4) devotion (damanik, 2020). Humans as social beings are also obliged to interact with nature by always protecting and preserving it (Wardhana and Arya, 2003).

There are many ways that can be done to educate humans starting from elementary school. One of them is (Lester, et al., 2013) making a game-based learning method system designed for elementary science education, namely Crystal Island: UNCHARTED DISCOVERY. This tool is developed with theoretical learning in the form of science content that is applied to a gameplay by means of interaction between the user and the game (narrative, problem solving, and involvement). Rapid technological advances certainly make every human being also have to experience developments in terms of learning. the creation of a game-based learning environment is a good lesson to apply to the curriculum (Kebritchi, et al 2010; Wouters, et al 2013).

Caring for the environment is one of the characters developed in schools in accordance with Ministry of National Education policies. However, the character of students is not formed instantly. The formation of the caring character of students must go through several stages, namely understanding kindness, commitment, behaving well and having a sense of culture-based habituation (Wibowo and gunawan, 2015; Rezkita, 2017). So, teachers, students and the school environment must have a sense of responsibility and care for the environment.

In addition to how to educate through a game, students must also have a sense of responsibility to protect the environment (Adriansyah, et al., 2016). The value of environmental concern can be taught by teachers to students with models, namely discussions, field practice, laboratory, seminar and debate so that later students can play an
active role in reconstructing their mental skills to build knowledge, experience and skills and can be transferred to others.

BUILD SOCIAL CHARACTERS IN ELEMENTARY EDUCATION

Globalization has influenced Indonesia with increasingly sophisticated technological developments, namely the era of the industrial revolution 4.0. This will be a challenge for educators so that education in Indonesia must pay attention to quality for the next generation. One of the Indonesian government programs is implementing the Adiwiyata program which is a program which combines learning with social action (Yasin, 2019).

Not only in Indonesia, but Japan will also implement a program in 2020 like that because the program in the past only targeted primary skills like greeting, hearing to other people and speaking courteously. The application of this program is to combine basic knowledge of lessons and problem solving (okada and matsuda, 2015). Usually social skills are not subject-based lessons, only if the teacher applies them. Matsuda (2015) proposes a problem-solving design that could be take in every sector so that later it will become something important to be taught to students. The way it is implemented is with a card game which will help teachers in teaching which goals to motivate students to consider about breaking problems in a social context.

MATERIAL AND METHODS

This research is based on a qualitative approach by focusing on the study of scientific literature on earth governance systems. The application of elementary education is carried out by playing a game to hone children's intelligence in cases of environmental and social care. this will have an effect on the earth's governance system because students are the bridge to these changes and will become the future of the earth's governance system. Therefore, this research develops from a Biermann study as a reference that occurs in the current earth governance system that needs to identify the problem. The development of this method is based on biermann research (2007; 2010; 2012; 2017; 2019) with five research challenges including agency, architecture, accountability, allocation and adaptiveness.

a. Architecture

The first research challenges of the Analytical Framework is Architecture, it relates to the interconnected institutional framework for sustainable development of principles, institutions and practices that shape decisions at all scales (Biermann, 2014). There are 3 main researches cited in this research, namely Manning and Reinecke (2016), Brandis et al., (2014) and Falaleeva, et all., (2011). The three studies discuss how to make government structures more participatory and easier for all parties involved.

b. Agency

Agency is the research challenges of this Analytical Framework that depict the character of state and non-state actors that have an impact on society and the ecosystem of earth governance (Biermann, 2014). There are 3 main researches cited in this research, namely Novalia et al., (2020), Swyngedouw (2005) and Dellas et al, (2011). The research discusses the need for cooperation in order to create a good government system.
c. Adaptiveness

Adaptiveness is the third research challenges of the analytical framework which is used to see responsive adjustments by various actors and responses to the stimuli of global change at various levels (Biermann, 2014). There are 3 main researches cited in this research, namely Chaffin and Gunderson (2016), Djalante (2012) and Werners, et al., (2009). The research discusses the government and private sector policies needed to keep up with changes dynamically to global changes.

d. Accountability

Accountability is the fourth research challenges of the Analytical Framework is an environmental responsibility that occurs. There are 3 main researches cited in this research, namely Chan and Pattberg (2008), Clap (2005) and Jedd and Bixler (2015). The research discusses about Complaints services are needed by the community so that the public or non-state actors can perform the function of control related to the performance of a country's government in the earth's governance system, so that the government has a sense of accountability in issuing its policies.

e. Allocation

Allocation is the fifth research challenges of the Analytical Framework which discusses the fair and effective allocation of resources. There are 3 main researches cited in this research, namely Kanie et al., (2010), Gupta and Lebel (2010) and Kalfagianni and Meisch (2020). The right allocation is needed to answer the problems of the earth's governance system so that there is no waste of resources and disputes at various levels.

RESULTS & DISCUSSION

The development of this method is based on Biermann's research (2007; 2010; 2012; 2017; 2019) with five research challenges, namely agency, architecture, accountability, allocation and adaptiveness by connecting character building starting during basic education, namely environmental and social awareness.
Earth system governance and the social science are influenced by early education, especially during the implementation of character education caring for the environment (Jayawardana, 2016). Character education here is education that instills knowledge, love, and inculcates good behavior where these character values must be repeated so that they become daily habits. There are many ways that can be done, one of which is a game. This game can provide an instinct to analyze problem solving with environmental and social contexts so that later it will help shape the character of students.
CONCLUSION

Earth system governance has five research challenges that are influenced by social science. The five challenges of this research are architecture, agency, adaptiveness, allocation, and accountability. A social system consisting of the community, government and non-government actors must work together to deal with the impact of the dynamic earth governance system. For this reason, elementary education is needed to reduce the negative impact of changes in the earth's governance system through the cultivation of character education that loves the environment and has a high social sense. Its application with a game so that students will be able to formulate, solve and interpret problems in various contexts.

REFERENCES


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