Integrating character education in mathematics learning in Indonesia and Denmark

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Abstract. The purpose of this study was to compare the extent of success, lack of success, and its causes in integrating character education with mathematics learning in shaping the character of students in Indonesia and Denmark. The qualitative method by interviewing, observation, documentation and FGD was conducted involving 16 mathematics teachers and 20 students. The results showed that the integration of learning in Denmark succeeded in building character such as learning independence, work discipline, responsibility for completing tasks, curiosity in learning, but had not succeeded in bringing children to have a spirit of togetherness at work, friendliness in sharing physical communication science. While learning products in Indonesia are the opposite. This success occurs because the teacher assignment system is supported with the successful use of technology and the involvement of parents. The use of technology has had a less successful effect in Denmark. In order to support successful integration, learning must focus on the choice of one character for one mathematical competency, by using a spiral system for grade 1 to 12 education levels, the teacher assignment system must be able to involve the surrounding environment and utilize technological facilities.

1. Introduction

Character education is the process of forming character of students who have a positive impact on their emotional development, spirituality, and personality. Therefore, character education or moral education is an important part of building a nation's identity. Emotional, spiritual, and personality intelligence are important in building strong, independent, active, creative and dedicated characters.

Indeed, a big step and strategy is needed to get to a nation with character, because character education is very important to support national development. It will not be possible to build a country if character education is not built [1]. This indicates how important character education or moral education is in building a nation's identity. The success and failure of character education to prepare the nation's builder is in the hands of educators, namely parents and teachers. When the nation's children are prepared early on, parents are responsible, but if they are willing to step on their teens, the teacher is the one most responsible for instilling character education. According to government regulation [2], only 18 characters appear (character dominant characters often appear in everyday life), namely: religious, honest, tolerance, discipline, hard work, creative, independent, democratic, curiosity, the spirit of nationalism, love for the homeland, respect for achievement, friendship/communicative, peace of mind, love to read, care for the environment, social care, and responsibility.

This study focuses on studying the duties of parents and teachers to accompany their students to learn mathematics integrated with character education that occurs in Indonesia, especially in Semarang

and in Denmark, especially in Aarhus. By learning mathematics as the right place to teach characters such as curiosity, learning independence, discipline, etc. [3]. The purpose of this research is to compare the extent to which successes and less successful ones and their causes from each country teach character education that is manifested in the form of daily behavior. Learning from the success and failure can then provide benefits in finding recommendations on how to teach character education specifically tailored to existing field conditions.

Character education in Indonesia has been regulated in law [2] that character education is the responsibility of the teacher. Character education is integrated with subjects. Mathematics as one of the subjects, the teacher is responsible for managing his learning to give birth to relevant characters. In fact, mathematics learning has not shown the desired results of changes in character behavior. Because mathematical material is an abstract material, it is possible for teachers to be more absorbed to learn mathematical concepts, so that they have not succeeded in instilling character education in students. Actually, character education is also the responsibility of parents. Parents in fact rely more on their children's education in school activities [4].

The education system implemented in Denmark is carried out with the principle of 5 activities [5]: 1) Playing while learning; 2) Combine curriculum and resources with digital; 3) Incorporation of formal and non-formal education systems; 4) Collaboration with corporations; and 5) Maintaining cultural values. In this case, even though character education is not formally promulgated, the principle of policy of the ministry of education has reflected that character education is integrated with all student activities. The school curriculum in Denmark aims to encourage the development of individual character of children. So, children not only learn about basic knowledge and skills, but also help develop their character.

Integration of learning is a learning activity that occurs simultaneously from two units or more. It is not easy to do an integration to provide services for each unit optimally. It usually occurs in learning that focuses on just one activity, and the other is just a complement. Here special attention is needed for each thing that must be learned. Integrating character education with subjects must be seen in advance the characteristics of each component unit so that the combination becomes a synergy. With the synergy the learning provides an opportunity to easily reach each of the goals programmed for each unit. Suppose that integrating character independence learning education will be strongly supported if mathematical material is related to concepts that are not too abstract such as geometry. However, if you teach mathematical material whose concepts are abstract majority, for example linear algebra, this will be more suitable if the character of curiosity is chosen.

By reviewing at a glance what happened with character education integrated with mathematics learning has not shown satisfactory results. It is evident that students in Indonesia in learning mathematics are still very dependent on teachers, and even for elementary students they are still very dependent on tutoring tutors, as well as the role of parents. This has an impact on the independence of learning, responsibility, curiosity, student work discipline in learning is still low.

While seeing children in Denmark since childhood, these character points seem so prominent in learning mathematics. On the other hand, they still have not shown a spirit of togetherness in work, hospitality in communication. This is due to the support of facilities in adequate learning and technological advances. Besides that, the sincerity of the teacher and the parents involved helps in the pattern of parenting well. But on the other hand, side effects also cause character products that are less precise.

By knowing more about the causes of the advantages and lack of products, the character of the students will be able to combine what kind of learning system is good to do.

2. Methods

This research was carried out with qualitative research methods. The scope of this study, by observing teachers and students at the elementary level up to high school, 10 students from Semarang (Indonesia) and 10 students from Aarhus (Denmark) and each of the 8 teachers from both countries. The interview activities were carried out by taking samples of 2 people each from students and

teachers in each country. In order to complete the information, the supporting documents were collected from each respondent.

The focus of research is the learning system of character education conducted by mathematics teachers, student character behaviour that occurs simultaneously with learning mathematics. Data is taken through observation, interviews and documentation. To strengthen the validity of the data obtained conducted a discussion forum in the two cities mentioned above. The data obtained was processed by descriptive analysis.

3. Result and Discussion

The results of interviews with Indonesian Mathematics teachers in Semarang explained that in learning character education they followed the instructions that had been implemented in accordance with what was enacted. They feel responsible for teaching character education to be integrated with mathematics subjects. They integrate character education outlined in written form on the learning design. One 2-hour learning plan, they recorded the integration of character items can contain more than 5 items [11], [12]. For example, by beginning and ending the lesson by praying that they already felt that they were teaching the items of religious character, the students handed over the assignments with the tippy they felt had instilled the character of responsibility. and so on. Actually, not enough character education is just pasted, learning must focus and show changes in programmed character behaviour.

Next is discussion with Indonesian students, about accepting character education along with mathematics learning. Students say it is normal, not yet feeling the pressure or encouragement of the mathematics teacher for certain characters. They feel that they are only carrying out what tasks are instructed by the teacher. For example, doing tasks independently, responsibility and discipline they have done. About the use of technology used for learning mathematics, not all students can use technology to learn. For those who can technologically they are less likely to get supportive assignments to explore the concept of what to do.

Based on the observations that have taken place in schools in Indonesia, the students in learning mathematics still have not shown their independence of learning, their responsibilities, their curiosity. They still depend on the instructions or instructions from the teacher. This is reflected not only in elementary school children but also in upper middle school children. This is due to the many other tasks that must be done so that the lack of time to make habituation in doing problem solving exercises, has not been able to utilize technology optimally. So, the lack of teachers provides concepts or work training that must be done by utilizing internet technology.

The evaluation system for achieving character education is done by filling in the form of the presence of the characters taught: there are or no characters in learning. This does not reflect the achievement of real character change behaviour, because the assessment appears only on paper. Character education at school still does not show seriously related to character education carried out in the family. It seems that the learning support for character education in the family has not shown significant results. In general, parents towards their children's character education, they are more trusted in school activities.

The results of interviews with teachers and students at Danish Aarhus that the character education learning system conducted in Denmark follows a program of play while learning, incorporating curriculum and resources with digital, it shows that character education is directly implemented in students. Here students are given the opportunity to shape their own character with the teacher's control. By learning mathematics in a fun way and with adequate internet technology facilities, it will accelerate children giving birth to almost all characters ranging from learning independence, curiosity, love of science, responsibility and so forth. The results of the discussion with students at Aarhus resulted in information that they learned to solve mathematical problems already accustomed to browsing alone through the library or via the internet. It's just that they are still difficult to share the results of knowledge, helping each other has not shown a positive thing. The ego feeling in academic matters is still high. This results in less everyday life showing the nature of hospitality.

There, teachers only adopt character education that has become accustomed to occurring in the family. Actually, character education takes place is a synergy between school, government and family facilitated by communication networks through communication technology. The education system in Denmark emphasizes collaboration with corporations and maintaining cultural values. Government interference is quite large. The evaluation system for character education achievements is not done formally but for teachers it has directly provided reward and punishment that occurred in the classroom. This is the strength that children in Denmark highly uphold character values well.

The results of observations of researchers in the field show that teachers in Indonesia teach character education integrated with subjects. They integrate it just sticking. Intended, as an example of a mathematics teacher when starting and ending learning, the opening prayer and closing prayer are done, here the teacher already feels that he integrates mathematics with religious character, when students gather assignments, they see that they have taught responsibility, and so on. This is not wrong, but it is not enough just to stick. The success of character education learning occurs when students are able to show behavioural changes as expected characters.

By looking at the conditions in the field Indonesian children still do not show strong character in learning mathematics. Then how should learning take place to help build student character. To build mathematical learning habits reach the desired character. Referring to the success of several studies ([6],, [7], [8], [10]), the programmed character changes will It appears that when integrating it is not enough just for a moment but doing habituation repeatedly. For example, teaching one topic of quadratic equations lasts 5 meetings, where the practice is focused, only integrating with one character, such as curiosity. The other characters are there but not the programmed focus for the material.

Next to differentiate learning that occurs in grades 1 through 12, how teachers teach the same character education. Each concept of character items is taught repeatedly over the next school in stages with different depth material, called the spiral system [9]. With the spiral model the teacher will be able to organize the stages of teaching characters not overlapping each other as they are now happening.

Learning from the success of the story with its technology from Denmark, it is time for the Indonesian government to provide adequate facilities for browsing the internet for the advancement of science in Indonesia. With the concept of learning while playing it means that character education is more charged to students' achievement. Hopefully mathematics teachers can try to condition the learning environment outside the classroom in the form of assignments by giving modules or other teaching materials. With this independent assignment, it can help students learn how to make material browsing, finally it can generate learning independence, discipline and responsibility in carrying out tasks.

The education system in Denmark highly upholds cultural values. This inspires that Indonesia is more serious about instilling cultural values in students. Actually, in Indonesia it has also instilled cultural values for a long time, but if measured success Indonesia is far more lagging behind. Regarding the shortcomings of character education that occur in Denmark, namely children lacking in friends are not socializing, lazy to gather, need to learn from Indonesia. As sophisticated as any technology, communication with people, especially teachers, is still very much needed. From the results of the communication will build the character of cooperation to give attention to each other, help each other and finally give birth to a sense of love.

4. Conclusion

The character education learning system does not stand alone as a subject but is integrated with subjects, including mathematics learning. Mathematical teachers in Denmark have managed to teach character education such as learning independence, work discipline, responsibility for completing tasks, curiosity to learn knowledge and so on, but still have problems in producing children who have a spirit of working together, friendliness to do physical communication in sharing knowledge. While learning products in Indonesia are the opposite. The location of success and lack of success lies in the

quality of support from the participation of teachers, parents and technological infrastructure to support student learning.

In order to support the success of the integrated character education learning system with mathematics subjects it was concluded: 1) the integration of programmed character items must be focused, one mathematics learning competency 3 to 4 concentration concentrations integrating only with 1 character; 2) learning character education from grades 1 to 12 is carried out in stages with a spiral system; 3) in order to provide habituation of a character combined with mathematical assignments carried out by giving assignments from the teacher which involves the ease of utilization of technology, requires the child to have communication both with parents or friends; 4) provision of adequate learning infrastructure facilities for browsing science for students.

To be able to integrate character education in mathematics learning that is able to produce changes in student character behaviour it is recommended 1) The teacher is able to choose the right learning strategy in choosing focus items that are programmed with the characteristics of the mathematics material being taught, and able to bring students to utilize technology correctly and physically socialize with the surroundings; 2) Students can condition themselves to use existing technology in order to complete tasks that come from the teacher in order to produce characters that support themselves to achieve the knowledge that must be mastered; 3) The government provides technological facilities and infrastructure that can be utilized by schools to support the acceleration of teaching and learning.

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