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CHARACTER EDUCATION IN MATHEMATICS LEARNING THROUGH HABITS OF MIND DEVELOPMENT TO SUPPORT THE ACHIEVEMENT OF STUDENTS' COGNITIVE MATHEMATICAL ABILITY

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Abstract

Character education and learning mathematics are often considered as two different things. Whereas character education is one of the focuses of the Kurikulum Merdeka through the Profil Pelajar Pancasila, which can be instilled in all fields of study. One way to provide character education in mathematics learning is through inculcating habits of mind. This paper aims to find out whether character education through instilling habits of mind can support the achievement of students' mathematical cognitive abilities. The method used in writing this paper is literature study or literature review. From the results of the literature study, it is found that character education can be carried out by instilling habits of mind. This is because the habits of mind have 16 indicators which are positive characters. Besides being able to develop positive character, character education through inculcating habits of mind can also support the achievement of students' cognitive abilities, which can also be seen from several previous studies. This is due to the positive characters that have been embedded in students, for example, such as the characters of perseverance, curiosity, critical, analytical, communication, and empathy. This means that by providing character education through instilling habits of mind, not only positive character will be formed in students, but students' cognitive achievement will also be more optimal.

Keywords: *Habits of Mind, Mathematical Cognitive Ability, Character Education*

INTRODUCTION

Character education and mathematics learning are often perceived as unrelated to each other in education. Learning outcomes through character education were usually not emphasised in mathematics learning. With the development of the world of education today has changed the perception of educators and stakeholders to no longer only rely on cognitive achievement but also to instil good character in students. Moreover, instilling good character cannot be done in a short time and carried out continuously (Hieng, 2021: 7). Character education also cannot be seen as the responsibility of one party or one subject only, but furthermore it is a shared responsibility including all subject teachers.

The importance of character education has been socialised by various parties who play a role in education. Character education encourages students to behave positively and contributes to improving the cognitive quality of students. As stated by Chairiyah that teachers need to build character education by emphasising not only the affective aspects but also the cognitive and psychomotor aspects (Chairiyah, 2014: 43). Character education not only affects how learners understand and apply knowledge, but also how they form their character, attitude or behaviour outside the classroom. This means that character education plays an important role in shaping a superior golden generation, thereby increasing the nation's competitiveness, and bringing change for the better (Yulianti, 2021: 30).

Character education and public perceptions change with the times. This is because the challenges and ways to respond to existing challenges require character that suits the times. Especially in an age with technology that has developed rapidly like today. Character education also wants students to have good character in the virtual world. Learners through character education are expected to be able to respond wisely to various problems and information circulating in cyberspace. Learners are also expected to be able to utilise and benefit from digital media positively for themselves and their lives (Waruwu et al., 2022: 2587).

The government has also realised the importance of character education. This can be seen from the emergence of the Merdeka Curriculum with an emphasis on the Pancasila Learner Profile. In the Pancasila Learner Profile, there is an expectation that students not only have skills and broad insights, but

also character, which is characterised by faith, devotion to God Almighty and noble character, global diversity, mutual cooperation, independence, critical reasoning, and creativity (Rencana Strategis Kementerian Pendidikan dan Kebudayaan 2020-2024, 2020). By embedding the Pancasila Student Profile in learning, it is hoped that education will be able to produce quality human resources, with character, whose every action is carried out on the basis of Pancasila values, and be able to meet the demands of the times through their skills.

Seeing the importance of instilling character in students, character education can no longer be seen separately from other fields of study. Character education that is entrusted only to the two subjects of Religion and Civic Education has many weaknesses in its implementation (Chairiyah, 2014: 48). Therefore, character education should be an integral part of the learning process in all subject areas, including mathematics.

Maths learning in schools is often considered as a subject that only focuses on cognitive abilities. Maths learning is often challenged in terms of students' motivation and engagement in learning activities. Students' lack of interest in mathematics and the assumption that mathematics is a difficult subject creates obstacles in developing students' mathematical cognitive abilities.

To overcome the difficulties in developing mathematical cognitive abilities, mathematics learning can be directed towards achieving affective abilities. The hope is that by optimising learners' affective abilities, it will have an impact on their cognitive abilities. One of the affective abilities that can be achieved through learning mathematics is habits of mind. Habits of mind is a character that intelligent individuals have in solving problems that are not easy to solve (Costa & Kallick, 2012: 17).

Developing students' habits of mind is the same as developing students' character through the habituation of mathematical thinking and behaviour (Susanti, 2012: 2). Through this habituation, not only positive characters will be obtained by learners, but also their cognitive abilities. As has been obtained in previous research, habits of mind contribute to various achievements of learners' cognitive abilities, such as mathematical communication, mathematical literacy, and mathematical problem solving (Malasari et al., 2019: 161; Ilmi et al., 2022: 29; Agustina & Munandar, 2022: 199). Based on this description, it means that instilling habits of mind in students can realise character

education as well as help the achievement of students' mathematical cognitive abilities. Therefore, the author raises the discussion of the article with the title Character Education through Planting Habits of Mind to Support the Achievement of Mathematical Cognitive Ability of Learners.

THEORETICAL FOUNDATIONS

1. CHARACTER EDUCATION

The origin of the term "character" comes from the Greek "charassian", which can be interpreted as "to mark" or "to characterise". The term emphasises the application of positive values to actions and behaviour (Waruwu et al., 2022: 2589). Character can also be defined as morals, which are ways of thinking and behaviour that reflect right-wrong and good-bad values that have become a habit (Chairiyah, 2014: 44). Such values are in accordance with the moral standards of society and are considered good character, while bad behaviour reflects a person's bad character.

Value is a term that is closely related to morals and character. Both values and character are something that can be instilled through education. Value education includes the discussion of ethics, norms, and morals. Character education as a form of value education is an effort to teach good values so that students have good character.

Character education is everything that is endeavoured to help individuals understand, care, and practice ethical values sincerely (Lickonna, 1992: 50). This means that character education is a conscious effort with the aim of helping individuals understand and act in accordance with fundamental ethical values. Character education focuses on the social, emotional, and moral development of individuals as the next generation. Character education can also be interpreted as character building or character formation. Character building is the process of carving and shaping an individual's soul into something unique, interesting, and different from others (Elmubarok, 2018: 102). In addition to character building, character education is also known as moral education, value education, emotional education, moral education, or character education.

2. HABITS OF MIND

Two words, habits meaning habit and mind meaning thinking form the term habits of mind. According to the definition by Costa and Kallick, habits of mind refers to a term to express the

characteristics possessed by intelligent individuals when they are faced with difficult problems (Costa & Kallick, 2012: 17). Habits of mind in 1985 was developed by Arthur L. Costa and Benna Kallick. Habits of mind continue to grow and be developed by other experts such as Robert J. Marzano. In fact, in his 1992 book, Marzano described habits of mind as part of a learning dimension that includes attitudes and perceptions, acquiring and integrating knowledge, extending and refining knowledge, applying knowledge meaningfully, and habits of mind (Marzano, 1992: 4). These learning dimensions play an important role in planning learners' learning activities, as well as providing broad and holistic guidelines for learning (Rahmat, 2007: 3). These learning dimensions are interconnected to improve the quality of learning by summarising a framework.

In addition to the learning dimension, based on Costa & Kallick, habits of mind also contains sixteen indicators that detail its characteristics. Among these sixteen indicators, some examples include the ability to control impulses, metacognition, determination, emphasis on precision, the ability to be sceptical and spot problems, and the ability to listen with understanding and empathy. Other indicators include the ability to think with flexibility, appreciation of humour, the ability to think dependently, the skill to investigate data by utilising the senses, openness to further learning, creativity, the ability to communicate carefully and clearly, being able to provide awe responses, application of knowledge in real situations, and skills in taking responsibility and risk (Malasari et al., 2019: 155).

Habits of mind are basically formed from various experiences, attitudes, and skills that individuals have had in the past (Costa & Kallick, 2015). Experience forms habits, so it will affect the overall success of the individual (Qadarsih, 2017: 181). Therefore, habits of mind have a very significant role in achieving success, especially in the context of learning mathematics (Miliyawati, 2014: 178).

3. MATHEMATICAL COGNITIVE ABILITY

Ability comes from the word capable which can be interpreted as being able or able to do something. Ability is an individual's mastery or proficiency of certain skills so that they are able to

perform various tasks in a job (Uno, 2014).

Cognitive is a mental process related to the ability to recognise and represent an object into a mental picture in the form of ideas, symbols, ideas, considerations, values, or responses (Zakiah & Khairi, 2019: 86). Cognitive is a factor that plays an important role in whether or not someone succeeds in learning. This is because learning activities generally involve the process of remembering and thinking (Sumanto, 2014). Therefore, in the learning outcome report, cognitive scores are almost always included, so that learning activities can be seen and evaluated.

Cognitive ability is a person's ability to perform tasks from simple to complex using brain-based skills (Basri, 2018: 1). Developing cognitive abilities, in this case the ability to think, is one of the focuses in learning mathematics (Kurniasih & Harta, 2019: 15). In general, mathematics learning objectives focus on developing thinking skills, positive behaviour, and character development (Mahmudi, 2016: 4). Learners can apply their mathematical knowledge when solving a problem if they have these cognitive abilities (Turner, 2010: 58). Therefore, it is important for students to have mathematical cognitive abilities, and it is also important for educators to be able to facilitate students so that mathematical cognitive abilities can be achieved.

METHOD

The method used in writing this paper is a literature study or literature review. The data collected and analysed are secondary data referred to the results of previous research or theories put forward by experts, which are sourced from books, journal articles, proceedings articles, and others relevant to the topic of Character Education Through Planting Habits of Mind to Support the Achievement of Mathematical Cognitive Ability of Learners. Data collection techniques are carried out using the technique of collecting, reading, and recording, where the author records the results of research or theories that have been collected and read, and are relevant to the topic discussed. The data collection instrument used is in the form of reading notes.

The series of literature study activities carried out include collecting a number of literature, reading literature, recording things that are considered relevant, managing library data systematically, critically, analytically, and objectively related to the topic of

Character Education Through Planting Habits of Mind to Support the Achievement of Mathematical Cognitive Ability of Learners. The data analysis technique used is content analysis data analysis technique. Indicators of data analysis are carried out by looking at the level of relevance of the articles referred to the topic of discussion and also the recency of the source. Relevance to the topic of discussion is determined based on the level of relevance from very relevant to quite relevant. While the recency of the source is seen from the latest data sources to older data sources.

DISCUSSION

Habits of mind refers to a term to express the characteristics that intelligent individuals have when they are faced with difficult problems (Costa & Kallick, 2012: 17). Problems that can be solved with habits of mind can be mathematical problems. Habits of mind contain a set of cognitive skills and mental attitudes that are essential in solving mathematical problems and developing deep conceptual understanding.

Habits of mind related to mental attitudes certainly also have an impact on character building in students. The role of habits of mind in shaping the character of learners is to overcome problems with intelligent and intellectual behaviour (Rahmatina, Fahradina, Hanum, & Mawardati, 2022: 1229). Character building is done through character education which involves developing positive values, attitudes, and behaviours in individuals to form a good and ethical personality.

If we look further, there is basically a close relationship between mathematical habits of mind and character education. Mathematical habits of mind accustom learners to develop skills that include 16 indicators. Among these sixteen indicators, some examples include the ability to control impulses, metacognition, determination, emphasis on accuracy, the ability to be sceptical and spot problems, and the ability to listen with understanding and empathy. Other indicators include the ability to think with flexibility, appreciation of humour, the ability to think dependently, skills to investigate data by utilising the senses, openness to further learning, creativity, the ability to communicate carefully and clearly, being able to provide awe responses, application of knowledge in real situations, and skills in taking responsibility and risk (Malasari et al., 2019: 155). This statement is also in line with the purpose of character education, which is to form individuals

who have integrity, responsibility, empathy, and adaptability (Sugiarto & Farid, 2023: 582).

In mathematics learning activities, learners often face various difficulties and challenges that require perseverance. With habits of mind, learners can stay focused on obtaining solutions and not giving up in the face of obstacles, thus reflecting character values such as perseverance and integrity in character education.

When learning in groups, learners are also taught to solve more complex problems through cooperation. Cooperation will take place effectively if learners have habits of mind indicators, namely being able to establish good communication and empathy for other people's points of view. By having these habits of mind indicators of communication and empathy, learners can also simultaneously develop positive character in themselves.

Furthermore, in its application to everyday life, habits of mind familiarises students to think critically and analytically in solving problems. This is also in line with the application of character education, where learners are expected to make moral and ethical decisions by first thinking about these decisions critically and responsibly.

Based on this description, it can be concluded that character education can be instilled through the development of habits of mind. By mastering the sixteen indicators of habits of mind, learners can have a positive character.

By forming a positive character through the provision of character education using habits of mind, it is also expected that students' mathematical cognitive abilities can be achieved. As mentioned earlier, that habits of mind related to mental attitudes have an impact on the formation of character in learners. The character plays a role in achieving the expected cognitive abilities. One way to achieve optimal cognitive abilities through character education with habits of mind is to foster curiosity and perseverance. This diligent and curious character will make learners persist in solving complex problems even though it is time-consuming and requires continuous effort. This causes learners to eventually not only know the concept, but also be able to solve problems using the concept, which means that their cognitive abilities have developed quite optimally.

Next, character education with mathematical habits of mind familiarises learners to have critical and analytical characters. This character also makes learners not only know the concept but

also can connect other concepts that have been learnt which may be a more effective way of solving. Learners learn to question the information they have, see patterns, connect concepts, analyse and decide which concepts can be used critically. This means that critical and analytical characters are very helpful in achieving students' mathematical cognitive abilities.

Furthermore, good communication character obtained by character education through mathematical habits of mind helps learners to be able to communicate the problem solving steps taken and the solutions obtained. This character will certainly help learners to clarify their own thinking and show how deep their understanding of mathematical material is. This shows that this character also helps learners to improve their cognitive abilities.

Empathy is also a point that is familiarised in the habits of mind. With the development of empathy character, learners can easily cooperate with their friends. This is because they are used to supporting each other, listening, and appreciating the contributions of team members. With empathy so that good cooperation is formed, learners will find it easier to understand a concept and solve complex problems.

Basically, habits of mind can help students' mathematical cognitive achievement. This can be seen from several studies that have been conducted by previous researchers. Habits of mind have a positive effect on mastery of mathematical concepts, mathematical generalisation ability, mathematical literacy, problem solving, creative thinking ability, and other abilities (Qadarsih, 2017: 184; Dwirahayu et al., 2018; Nuurjannah et al., 2018: 56; Nurmala et al., 2019: 167). Based on this description, it means that character education instilled through habits of mind not only forms good character in students, but also optimises the achievement of their cognitive abilities.

CONCLUSION

Character education and mathematics learning are no longer mutually exclusive. In fact, character education and mathematics learning can support each other. One way to provide character education in mathematics learning is through the cultivation of habits of mind. This is possible because the sixteen indicators of habits of mind are in line with the goals of character education, namely to form individuals who have integrity, responsibility, empathy, and adaptability.

On the other hand, the cultivation of habits of mind will not only develop positive character in students, but will also support the achievement of their mathematical cognitive abilities. Habits of mind related to mental attitudes have an impact on character building in learners. The character plays a role in achieving the expected cognitive abilities. Support for mathematical cognitive achievement can also be seen from several studies that have been conducted by previous researchers. Habits of mind have a positive effect on mastery of mathematical concepts, mathematical generalisation ability, mathematical literacy, problem solving, creative thinking ability, and other abilities.

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