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Urgency Analysis of Constructivism-Based Mathematics Learning Model Integrated With Character Education

Heny Sri Astutik[1], Abdul Rahman[2*], Nurwati Djam'an[3]
Universitas Negeri Makassar
Corresponding Author: Abdul Rahman rahmanmallala@gmail.com

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A B S T R A C T

This research aims to provide Strengths, Weaknesses, Opportunities, Threats analysis of the urgency of constructivism-based mathematics learning model integrated with character education to obtain information needed as a model needs analysis. This research is descriptive qualitative research with a phenomenological approach. Based on the data obtained through questionnaires, interviews and observations in the field study, then analysed using SWOT analysis to minimise existing weaknesses and threats, but together can maximise the strengths and opportunities that already exist. In general, based on the results of SWOT analysis, the constructivism-based mathematics learning model integrated with character education is a necessity so that several strategies can be used to maximize the existing strengths and opportunities and minimize the existing weaknesses and threats according to SWOT analysis

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INTRODUCTION

In recent decades, the constructivism approach to learning, which is a learning approach that focuses on deep understanding, has received considerable attention as an effective approach to help students acquire critical thinking and analysis skills, especially in mathematics learning. The constructivism approach focuses on a process of reflection and hands-on experience where students actively construct their own knowledge (Do et al, 2023; Tsai et al, 2023; Komatsu & Jones, 2021). However, the application of constructivism in mathematics learning often still focuses on cognitive aspects and does not consider the development of character values, such as responsibility, cooperation, and integrity. In fact, in this challenging global era, character education is becoming increasingly essential to help students who are not only academically proficient but also have integrity and are able to work together in various social contexts.

It is expected that the integration of character education and constructivism-based learning models can help build a generation of learners who holistically combine cognitive skills with a strong moral foundation (Lee, 2013). In Indonesia, efforts to integrate character education into the national curriculum have begun, but there are still some problems and challenges in its application in the classroom, especially in mathematics learning. Thus, it is important to explore and analyze the urgency of implementing constructivism-based mathematics learning models that are specifically integrated with character education, to produce a learning process that is not only academically effective, but also meaningful for the formation of learners' character (Zhang et al., 2023; Walker, 2023).

In the midst of the urgency of improving the quality of holistic education, there is still a significant gap in the application of mathematics learning models that are able to integrate learner character development. Mathematics learning usually focuses on cognitive aspects, such as concept understanding, numeracy and problem solving (Fauzan et al., 2024). However, it often ignores affective aspects that are very important for personality formation. Character values such as discipline, perseverance, cooperation, responsibility are very important in enriching the mathematics learning experience, building a positive learning ethos, and preparing students to face challenges in real life (Babo & Syamsuddin, 2023). There are limited learning models that simultaneously develop critical thinking skills while instilling character values, so this research focuses on developing a constructivism-based mathematics learning model that comprehensively supports character building (Nurizka & Gunawan, 2022). The purpose of this research is to fulfill the need for learning that is more inclusive and beneficial for student development in various aspects of life.

The purpose of this study is to analyze the urgency of developing a constructivism-based mathematics learning model integrated with character education. By combining two important aspects of the constructivism approach that encourages learners to actively build their understanding through exploration and reflection with character education that instills moral and social values (Sitanggang, 2018). This research aims to produce a more holistic and

effective learning approach . This research specifically investigates how well this model improves learners' critical thinking skills as well as its contribution to the development of positive attitudes such as cooperation, responsibility, perseverance during the learning process of mathematics. Thus, the aim of this research is to make a real contribution to the development of learning models that can prepare learners to face future academic and social challenges.

Despite the many advances in the field of mathematics education, there are still issues about how constructivism is integrated with character education in learning models (Harrison et al., 2020). Most of the literature on constructivism-based learning focuses on the development of critical skills and conceptual understanding (Widjajanti & Wahyudin, 2015; Sitanggang, 2018), with little discussion on how this model can simultaneously support the strengthening of learners' character, especially in the context of mathematics learning. Character education on the other hand has not been fully explored in supporting students' cognitive abilities because it is often used as a separate approach and not integrated with the teaching of certain disciplines. This study tries to fill the gap by designing and testing a mathematics learning model that specifically integrates constructivism and character education. This study is expected to contribute to the Education literature by offering a model that can be used to support more comprehensive and meaningful learning for learners.

This research offers a novel approach to learning by designing a model that integrates constructivism with character education in a mathematics learning context, a combination that has not been explored in previous research. This model is not only academically useful but also relevant to the demands of 21st century education, which emphasizes cognitive skills and important character values (Holman & Svejdarova, 2023). The need for a generation that is able to think critically and has a strong moral foundation is increasingly urgent due to increasingly complex global challenges. This research has a contribution to the development of modern pedagogy that not only focuses on academic achievement, but also on the holistic character building of learners. This research needs to be done because of the urgency of developing a learning model that is able to prepare students to become independent learners with integrity, besides that it will also add insight to the Education literature on meaningful and comprehensive learning models

LITERATURE REVIEW

Constructivism

The view of constructivism is based on certain philosophies related to humans and knowledge, meaning that how humans come to know and have knowledge becomes important in constructivism where knowledge is formed from the understanding of the organism through the process of interaction with the environment and people around him. Constructivism view in learning emphasizes the process rather than learning outcomes, meaning that learning outcomes which are learning objectives are still considered important but on the other hand the process involving methods and strategies is also considered important. The constructivism view considers that learning is an active process to construct knowledge supported by the creation of interactions between learners and teachers, interactions between learners, and interactions between learners and the environment (Kukla, 2000; Bidell & Fischer, 2005; Schunk, 2012).

Constructivism learning theory states that in learning students must find, transform complex information, check new information with old rules and make revisions if these rules are not appropriate, besides constructivism learning theory states that the best way for students to acquire concepts or principles in the process of learning mathematics is to construct their own representation of a concept or principle that has been learned where this theory requires that students not only passively receive information, but always create new knowledge based on previous knowledge in relation to new experiences (Amri, 2013; Ibrahim & Supardi, 2012; Major & Mangope, 2012)

Character Education

Character education that is managed systematically will be able to produce good and wise human beings. The definition of character education has been stated by many experts, among others Lickona (1999) states "Character education is the deliberate effort to cultivate virtue. Thinking and discussing are important, but the bottom line is behavior, taken to be the ultimate measure of character". This means that character education is a deliberate effort to cultivate virtue, thinking and discussing are important, but the bottom line is behavior, which is considered the ultimate measure of character. Furthermore, character education is briefly defined as "Character education as knowing the good, loving the good, and doing the good", meaning that character education is an effort to know the good, love the good, and do the good (Williams, 2000). Another opinion Protz (2013) states that character education is seen as an effort to be virtuous, the hope that schools can solve societal problems, a means of improving academic achievement and a means of correcting behavior to build resilience in the academic environment. National character education should be seen as the core of an educational process (Rahman, 2016). The objectives of character education include: (1) reduce negative behaviors that hurt children and hurt society (Lickona & Davitsin, 2005), (2) build and complement the values that have grown in society (Daniastuti & Haryadi, 2017), (3) Realize the noble values contained in Pancasila, namely patterns of behavior, patterns of feeling, and patterns of thinking in the daily life of Indonesian society as a whole (Zuchdi, 2011).

METHODOLOGY

This study is a descriptive qualitative research to get an in-depth overview of the implementation of the learning model, as well as to explore the potential and challenges faced in its implementation in junior high schools (Creswell, 2015). The subjects of this study included mathematics teachers, principals, and grade VIII students from nine junior high schools located in Sorong Regency. This selection of subjects aims to obtain a comprehensive perspective from education stakeholders regarding the effectiveness and relevance of the learning model under study. The research was conducted through several stages which include the preparation stage, the implementation stage, and the analysis stage. Data was collected through three main techniques, namely in-depth interviews, classroom observations, and questionnaires. Interviews were conducted with teachers and principals to obtain their views on the effectiveness and constraints in implementing the model. Classroom observation was used to directly observe the learning process to see the extent to which the learning model was implemented. Questionnaires were distributed to students to evaluate their understanding of the material as well as their perception of the character values integrated into the learning. The data obtained was analyzed using SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) to dig deeper into the strengths, weaknesses, opportunities and threats of the implementation of this learning model. This analysis allows us to understand the aspects that support or hinder the implementation of constructivism-based mathematics learning integrated with character education in junior high schools in Sorong Regency.

RESULTS

The needs analysis was carried out with the aim of obtaining the information needed to analyze the needs of the preliminary study in developing a constructivism-based mathematics learning model integrated with character education.

Field Study

The activities in the field study were distributing questionnaires, observing the implementation of learning in the classroom, and interviewing students, mathematics teachers, school principals or deputy head of curriculum as an effort to obtain data for the needs analysis. The description of the field study results is described as follows.

Data from questionnaires and interviews with teachers and principals / deputy heads of curriculum, namely questionnaires were filled out by 15 mathematics teachers and 40 grade VIII students at public and private junior high schools in Sorong Regency. Interviews were conducted with 8 mathematics teachers and 8 principals/deputy heads of curriculum. Observation of learning implementation and questionnaire filling was carried out at 8 junior high schools. Based on the results of data analysis of interviews, observations, and questionnaires filled out by teachers related to lesson planning, namely the preparation of teaching modules, it was found that all teachers (100%) had compiled teaching modules that referred to the independent curriculum. The teaching module components include: a) general information, consisting of: module identity, initial competence, PPP, infrastructure, target students, learning

model; b) core components, consisting of: learning objectives, meaningful understanding, triggering questions, learning activities, assessment, enrichment and remedial; c) attachments, consisting of: LKPD, teacher and student reading materials, glossary. Further data related to the preparation of teaching modules, namely 33.33% or 5 teachers use learning theories as guidelines in making teaching modules and all teachers, namely 100% or 15 teachers, have included the desired character education values in the teaching modules.

Learning resources are important to support the smooth implementation of learning. Questionnaire analysis data related to learning resources shows that 100% or 15 teachers use the available mandatory package books as learning resources, there are 14 teachers or 93.33% using 2-4 other source books as support, and no teachers or 0% have self-developed modules. From the results of interviews obtained answers related to learning resources, namely books as learning resources are still limited, internet access is still very limited, especially in peripheral areas, learning modules and LKPD are still very limited, this identifies that facilities and infrastructure are not adequate.

Learning media is a tool to convey information or learning materials. LKPD is one of the printed learning media. The results of the questionnaire analysis related to the learning media used by mathematics teachers obtained data that 12 teachers or 80% used LKPDs that were not made by themselves and 3 teachers or 20% used powerpoints. From the results of the interview, the reasons were obtained, namely not having enough time to make learning media such as videos, LKPDs or power points.

Data analysis related to the implementation of learning using constructivism-based learning models, namely cooperative learning, active learning, contextual learning, problem-based learning, and problem solving learning obtained data that all teachers stated that they had used cooperative learning models or 100% stated that they had used cooperative learning models, then 12 teachers out of 15 teacher respondents had used contextual learning models or 80%, 40% of teachers had used PBL learning models or 6 teachers out of 15 teacher respondents stated that they had implemented PBL learning models, then 26.67% had used Problem Solving models, and only 33.33% of teachers knew constructivism learning. A total of 3 people stated that they taught by inviting students to present in front of the class, then all teachers more often taught using the lecture method and giving assignments.

Data related to the assessment carried out by teachers in assessing the results of mathematics learning carried out with reference to the applicable curriculum obtained information that all teachers, namely 100% of teachers conduct cognitive assessments, only 2 teachers or 13.33% who conduct attitude assessments and no teachers have conducted skills assessments during the learning process besides that information obtained that attitude assessment instruments are not made. These results indicate that the assessment of mathematics learning outcomes is dominated by the assessment of cognitive/knowledge aspects while the assessment of attitudes and skills receives less attention.

The results of data analysis related to the results of mathematics learning obtained by students show that students are more memorizing formulas but less in applying the formulas, besides that all teachers state that students are able to work on problems according to the examples discussed with teachers and students but when the editorial of the problem is changed just a little then students have difficulty in working on it, this identifies that mathematics learning is less meaningful.

Data related to the integration of character education in mathematics learning that has been carried out by teacher respondents, namely all teachers or 100% of teachers include character education values in their lesson plans / teaching modules, 14 out of 15 teachers do not follow up on character education written in lesson plans / teaching modules. The results of the interview show that the way teachers carry out character education includes reprimanding students who interfere with the learning process and reprimanding students who violate the rules. In addition, the interview results also show that the integration of character education in mathematics learning is important as a contribution to strengthening students' character education. These results show that the integration of character education in mathematics learning is important as a contribution to strengthening the character of students. Furthermore, teachers not only focus on knowledge competence but also focus on attitude competence as a strengthening of character values.

Observation data of mathematics learning in junior high schools were obtained from the learning process, namely the activities of students and teachers in the implementation of mathematics learning in the classroom. Observations were conducted in eight junior high schools in Sorong Regency which also became the location of the pilot test of the developed model. Based on the agreement with the mathematics teacher as the implementer of learning in the classroom, learning observations were carried out 1 face-to-face meeting of 2JP in each school where the implementation was adjusted to the teaching schedule of the mathematics teacher in the classroom. From the data on the results of observations of learning implementation, information was obtained that there were teachers who forgot to convey learning objectives, learning activities were still dominated by the teacher, the learning objectives conveyed were only cognitive aspect learning objectives for affective and psychomotor aspects learning objectives received less attention from the teacher, Character Education written in the lesson plan / teaching module was still not well implemented, the involvement of students in the learning process was still lacking because the teacher was more dominant in the learning process by applying the lecture method.

Data from the results of questionnaires and interviews of students conducted on 40 class VIII students from 8 junior high schools in Sorong Regency, among others, related to learning methods that have been experienced by students, namely all students or 40 students often experience learning using the lecture method, 7 out of 40 people have learned with the group discussion method, all students or 40 people learn with the problem practice method, 11 out of 40 people stated that they were often actively involved in learning activities, 12 out of 40 students stated that they had asked questions during the learning process and 9 people stated that they had presented in class during learning. The results of interviews related to the obstacles to learning mathematics experienced by students, namely students stated that mathematics was difficult learning and the reason stated was that they quickly forgot the formula. The results of the interview also showed that all students stated that they were not familiar with the constructivism learning model, so an overview of constructivism learning was needed for students. The results of interviews with students related to character education show that students already know character education but have not experienced character education in the process of learning mathematics, teachers are more focused on discussing mathematics learning material through lectures and assignments, rarely studying in groups and some have never even learned with group discussions, there is no character education that is clearly integrated so that in general students consider mathematics as a difficult lesson with many formulas that must be memorized. The description above shows that there is a need for a new learning model integrated with character education that makes students collaborate in the implementation of learning.

Literature Study

The literature review was conducted by reviewing journal articles, books related to character education, learning theory, learning models, and others as described in chapter II. Review of the legal basis (Government Regulation Law, Ministerial Regulation, etc.). The legal basis in terms of the juridical aspects of the development of constructivism-based mathematics learning models integrated with character education in Indonesia can refer to several national regulations and policies that support educational innovation, among others:

- Law No. 20/2003 on the National Education System (Sisdiknas).

Article 3: National education functions to develop abilities and shape the character and civilization of a dignified nation in order to educate the nation's life. Education aims to develop the potential of students to become human beings who believe and fear God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens.

- Government Regulation No. 19 of 2005 on National Education Standards.

Article 28: Teachers must have pedagogical, personality, social and professional competencies. These competencies are expected to help teachers develop learning models that suit students' needs, including constructivism-based learning models and character education.

- Permendikbud No. 23 of 2015 on Cultivating Budi Pekerti.

This regulation emphasizes the importance of cultivating ethics through activities that are integrated in daily learning at school.

- Permendikbud No. 20 of 2016 concerning Graduate Competency Standards for Primary and Secondary Education.

Underlining the importance of developing character competencies in the learning process, so that students not only master knowledge and skills but also have good character.

- Permendikbud No. 22/2016 on Process Standards for Primary and Secondary Education Regulates the learning process that must be interactive, inspiring, fun, challenging, and motivate students to actively participate and provide sufficient space for initiative, creativity, and independence in accordance with the talents, interests, and physical and psychological development of students.
- Permendikbud No. 24 of 2016 concerning Core Competencies and Basic Competencies.

Establish core and basic competencies that must be achieved by learners at each level of education, including competencies in character and learning that emphasize constructivism.

- Presidential Regulation No. 87/2017 on Strengthening Character Education.

Although issued before 2022, this Presidential Regulation is still relevant because it regulates the national strategy to strengthen character education in students at all levels of education.

- Permendikbudristek No. 17 of 2022 concerning Merdeka Curriculum.

The Merdeka Curriculum encourages a more flexible and student-centered learning approach, allowing for the integration of constructivism and character development approaches. This approach emphasizes learning that is relevant, contextual, and supports the development of student competencies and character.

- Permendikbudristek No. 23 of 2022 concerning Process Standards for Primary and Secondary Education.

This regulation updates the education process standards to be more comprehensive, including learning approaches that support pedagogical innovations such as constructivism and the integration of character education.

- Permendikbudristek No. 24 of 2022 concerning Education Assessment Standards. Regulating a more holistic assessment, measuring not only knowledge but also aspects of student character and skills, supports learning that integrates character education in various subjects including mathematics.

These regulations provide a strong legal basis for developing and implementing constructivism-based mathematics learning models integrated with character education, ensuring a comprehensive and relevant educational approach to the times.

Urgency of Model Development

Based on data obtained through questionnaires, interviews, and observations in field studies (field research), then analyzed using Strenghth Weakness Opportunities Threats (SWOT) analysis. The rationale for using SWOT analysis is to minimize existing weaknesses (Weaknesses) and threats (Threats), but simultaneously maximize existing strengths (Strenghts) and opportunities (opportunities). Based on the results of the SWOT analysis, this study identified several strengths, weaknesses, opportunities, and threats in the application of constructivism-based mathematics learning models integrated with character education in Sorong District.

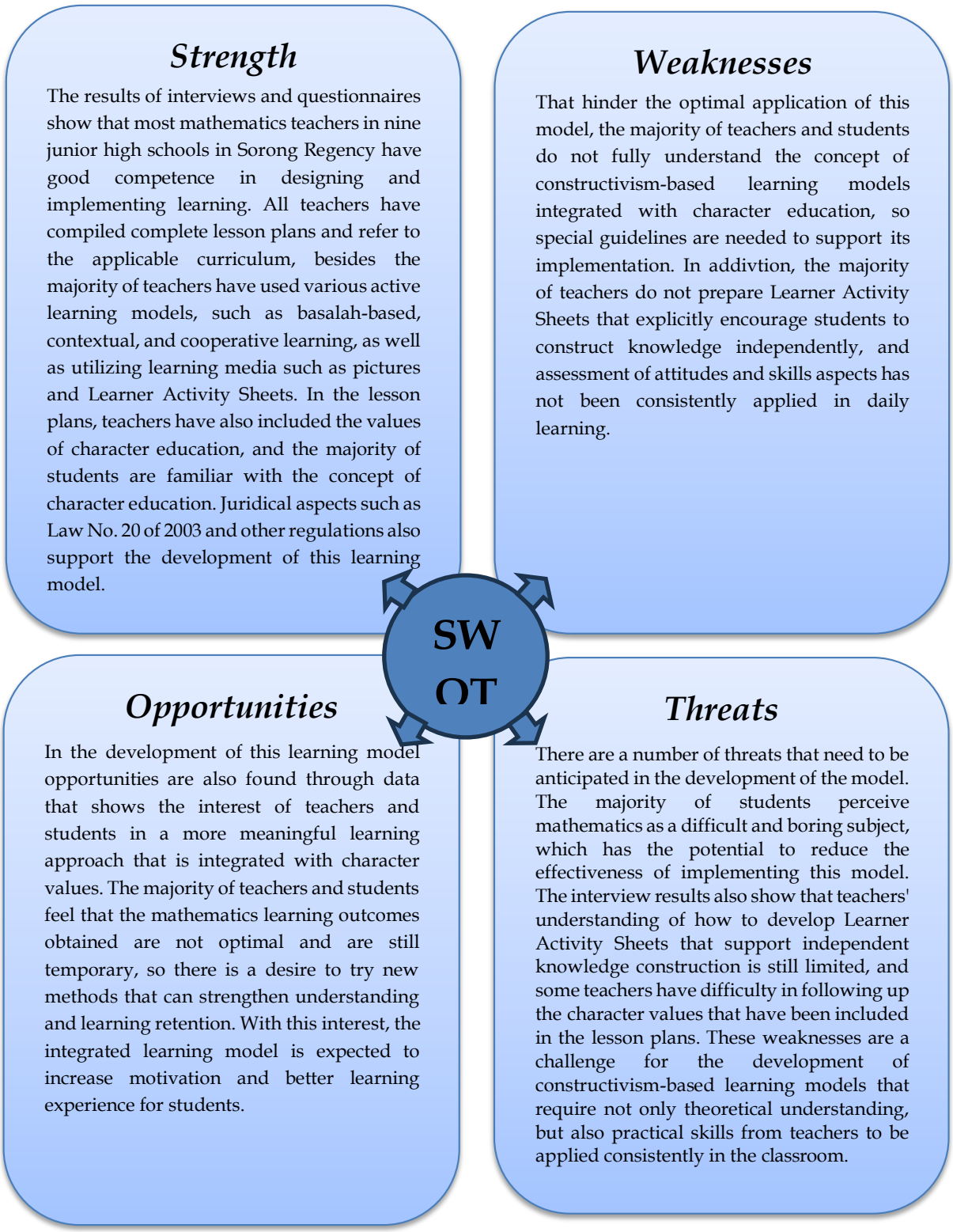

Figure 1. The Results of the SWOT Analysis

The results of this study indicate the importance of implementing a constructivism-based mathematics learning model integrated with character education in Sorong District, which is not only based on the instructional strength of teachers, but also on the juridical encouragement of various national education regulations. The use of problem-based, contextual, cooperative learning models by the majority of teachers indicates a pedagogical readiness to align mathematics learning with a constructivism approach that emphasizes student involvement in the learning process (Suhendi et al., 2021). The inclusion of character values in lesson plans reflects significant efforts by teachers in meeting the objectives of character education. In the context of constructivism education theory, this finding shows that constructivism-based learning models integrated with character education are not only relevant, but also have the potential to strengthen cognitive and affective aspects holistically (Febrian et al., 2023). Previous research supports that the combination of character education and constructivism learning models in mathematics learning can help students develop a deep understanding of the material while fostering positive character, an approach that is fundamental in 21st century education (Fauzan et al., 2024; Wahono et al., 2021).

CONCLUSIONS AND RECOMMENDATIONS

This study found that a constructivism-based mathematics learning model that integrates character education has great potential to be used in junior high schools in Sorong Regency. The pedagogical readiness of teachers who have implemented active learning approaches regularly and included character education values in lesson plans, is a major factor in implementing this model. In addition, the legal basis of this model is strengthened by juridical support and national education regulations. However, weaknesses and threats found in this study included limited understanding of the constructivism model integrated with character education and students' poor view of mathematics. Given the great opportunities especially if teachers and students are interested in adopting the new model, this model can be a way to improve students' mathematical understanding and retention as well as forming sustainable positive characters.

FURTHER STUDY

This research has limitations that need to be observed, among others, the scope of the study is still limited to urgency analysis and does not include the development and empirical testing of the proposed learning model. In addition, the data obtained are mostly qualitative and reflective, so they do not provide a strong quantitative picture of the effectiveness of character education integration in constructivistic models. Further research is recommended to develop a prototype of the constructivism-based learning model integrated with character education that has been designed, then test it quasi-experimentally at various school levels and environments. The validity, effectiveness, and long-term impact on student character building and mathematics learning outcomes need to be studied further to strengthen the theoretical and applicative basis of this model

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REFERENCES

Amri, S. (2013). Pengembangan dan model pembelajaran dalam kurikulum 2013. Jakarta: Prestasi Pustakarya.

Bidell, T. R., & Fischer, K. W. (2005). Cognitive development in educational contexts: Implications of skill theory. In A. Demetriou (Ed.), Neo-Piagetian theories of cognitive development (pp. [page numbers]). New York: Routledge.

Cheng-An, T., Song, M.-Y. W., Lo, Y., & Lo, C.-C. (2023). Design thinking with constructivist learning increases the learning motivation and wicked problem-solving capability—An empirical research in Taiwan. Thinking Skills and Creativity. https://doi.org/10.1016/j.tsc.2023.101385

Creswell, J. W. (2015). Penelitian kualitatif & desain riset. Yogyakarta: Pustaka Pelajar.

Daniastuti, E., & Haryadi, H. (2017). Pengembangan bahan ajar tematik integratif berbasis nilai karakter disiplin dan percaya diri. Jurnal Pendidikan Karakter, 7(2).

David, I. W. (2023). Towards a critical character education using virtue ethics philosophy and Bourdieu's sociology. Journal of Moral Education. https://doi.org/10.1080/03057240.2023.2288360

Djamilah, B. W., & Wahyudin. (2015). Mengembangkan kemampuan pemecahan masalah dan belief calon guru matematika melalui strategi perkuliahan kolaboratif. Cakrawala Pendidikan. https://doi.org/10.21831/cp.v3i3.4204

Dwi, M. F., Iltavia, I., & Ergusni, E. (2023). Pembelajaran matematika realistik Indonesia (PMRI) dalam membangun karakter peserta didik. Lattice Journal. https://doi.org/10.30983/lattice.v3i1.6560

Harrison, T., Burn, E., & Moller, F. (2020). Teaching character: Cultivating virtue perception and virtue reasoning through the curriculum. Educational Review. https://doi.org/10.1080/00131911.2018.1538937

Husnul, F., Khairul, A., J. A., Dahlan, N., & Kec, M. (2024). Studi literatur: Peran pembelajaran matematika dalam pembentukan karakter siswa. Jurnal Riset Rumpun Ilmu Pendidikan. https://doi.org/10.55606/jurripen.v3i1.2802

Ibrahim, S., & Suparni. (2012). Pembelajaran matematika, teori dan aplikasinya. Yogyakarta: SUKA-Press UIN Sunan Kalijaga.

In, J. L. (2013). Effective approaches for moral education to cultivate creativity and character in elementary school. The Journal of Ethics. https://doi.org/10.15801/je.1.92.201311.79

Joko, W., Kusumawati, I., Nasir, A., & Bowo, A. (2021). Developing Pancasila and citizenship education learning model based on character education through comprehensive approach. Indonesian Journal of Educational Management and Innovation. https://doi.org/10.12928/ijemi.v2i2.3239

Kholidah, S. (2018). Creating critical thinking from affective domain in successful learning of mathematics. International Journal of Approximate Reasoning. https://doi.org/10.21474/IJAR01/6382

Komatsu, K., & Jones, K. (2021). Generating mathematical knowledge in the classroom through proof, refutation, and abductive reasoning. Educational Studies in Mathematics. https://doi.org/10.1007/s10649-021-10086-5

Kotaro, K., & Jones, K. (2021). Generating mathematical knowledge in the classroom through proof, refutation, and abductive reasoning. Educational Studies in Mathematics. https://doi.org/10.1007/S10649-021-10086-5

Kukla, A. (2020). Social constructivism and the philosophy of science. New York: Routledge.

Lickona, T., & Davitson, M. (2005). Smart & good high schools: Integrating excellence and ethics for success in school, work, and beyond. Center for the 4th and 5th Rs.

Major, T. E., & Mangope, B. (2012). The constructivist theory in mathematics: The case of Botswana primary schools. International Review of Social Sciences and Humanities, 3(2), 139-147.

Rahman, A. (2016). Pendidikan karakter dalam pembelajaran matematika. Aksioma, 5(3).

Rosleny, B., & Syamsuddin, A. (2023). Using the aptitude-treatment interaction model integrated character values to improve mathematical story problem-solving skills for fifth-grade students. European Journal of Mathematics and Science Education. https://doi.org/10.12973/ejmse.4.3.191

Schunk, D. H. (2012). Learning theories: An educational perspective (Teori-teori pembelajaran perspektif pendidikan). Yogyakarta: Pustaka Pelajar.

Suhendi, A., Purwarno, P., & Chairani, S. (2021). Constructivism-based teaching and learning in Indonesian education. KnE Social Sciences. https://doi.org/10.18502/kss.v5i4.8668

Walker, D. I. (2023). Towards a critical character education using virtue ethics philosophy and Bourdieu's sociology. Journal of Moral Education. https://doi.org/10.1080/03057240.2023.2288360

Williams, M. M. (2000). Models of character education: Perspectives and developmental issues. The Journal of Humanistic Counseling, 39(1), 32-40.

Yanzhen, Z., Clayton, R. C., & Brian, C. S. (2023). PurposeFull People SEL and character education program: A cluster randomized trial in schools implementing Tier 1 PBIS with fidelity. School Mental Health. https://doi.org/10.1007/s12310-023-09600-2

Zuchdi, D., Prasetya, K. Z., & Masruri, S. M. (2010). Pengembangan model pendidikan karakter terintegrasi dalam pembelajaran bidang studi di Sekolah Dasar. Jurnal Cakrawala Pendidikan, 1(3), 345-357.