Comparison of Mathematics Learning Curriculum in Singapore, Japan, Malaysia, and Indonesia

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Abstract

In numerous worldwide measurement methodologies such as TIMSS or PISA, Indonesian pupils' mathematical competence is still lower than that of several other countries. Indonesia needs to make some efforts to improve students' mathematical abilities and skills. Comparative studies, as one of the initiatives, are planned to provide an overview and serve as a foundation for future learning improvement. This research compares the curriculum and mathematics learning of Singapore, Japan, and Malaysia with Indonesia. A literature review was used to perform this study, which took a qualitative approach. The study's data comes from secondary sources such as books, journals, and online material. Based on the study findings, differences in the curriculum and mathematics learning in Singapore, Japan, Malaysia, and Indonesia impacted students' mathematical abilities. Singapore and Japan implemented problem-solving mathematical learning methods. Teachers give significant instructional materials and practice questions during the learning process to enhance students' capacity to find a solution; thus, learning is more than just knowing the correct answer. While the methods of learning mathematics in Indonesia and Malaysia were initially similar, they both relied on algorithms, memorization, and repetitive exercises. On the other hand, current Indonesian and Malaysian mathematics education attempts to strengthen students' mathematical comprehension and problem-solving ability. Malaysia has likewise emphasized the use of technology in mathematics education.

Keywords: Comparison, Curriculum, Mathematics Learning, Singapore, Japan, Malaysia, Indonesia

1. Introduction

Education is strongly connected with the quality of life; hence it plays an important part in human existence (Miliyawati, 2016; Hamidah, 2021). Education is described as a purposeful attempt to develop pupils' potential in terms of spirituality, personality, knowledge, and skill in statute number 20 in 2003. Where the information and abilities that everyone needs to maximize their potential are fundamental components of the educational process, to stimulate a nation's success, education must be improved to ensure that the development of student competencies proceeds smoothly. Furthermore, the advancement of science and technology in recent decades has presented new problems to a government or nation. Citizens need more serious attention from stakeholders worldwide to educate students with the knowledge and skills they need to attain their full potential and translate talents into a better living (OECD, 2019). A current necessity is to provide consistent education to provide students with the most information and skills possible (Winarso, 2014).

The growing number of difficulties necessitates all-out efforts to prepare human resources capable of meeting them. The manifestation of the need to confront these difficulties is expressed in educational goals

that are expressly stated in school curricula (Hidayah, 2021). As a result, the curriculum is the most significant aspect of education and teaching since it serves as an instrument for maintaining consistency in reaching maximal educational goals (Hamidah, 2021). Probowo (in Hidayah, 2021) describes the curriculum as a set of objectives, content, and learning resources that guide teaching and learning activities to attain educational objectives. The curriculum consists of interconnected components such as objectives, resources, techniques, and assessments that are the foundation for constructing a learning system (Miliyawati, 2016). According to Miliyawati (2016), curriculum change is unavoidable since education must be able to keep up with changing difficulties over the ages. However, according to Absawati (in Hamidah, 2021), adjustments and improvements to the curriculum in Indonesia have not been able to enhance the quality of Indonesian education considerably, and the country remains in the bottom category when compared to other nations.

Mathematics is included in the curriculum at every level of education in Indonesia as an indicator of educational quality in evaluating The Program for International Student Assessment (PISA) and The Third in International Mathematics and Science Study (TIMSS). According to Hamidah (2021), mathematics is one of the disciplines with a high level of urgency due to its connections to various other courses. Mastery of mathematical content for students must focus on stakeholders in education as one of the fields of science that plays an essential part in developing science and technology (Siagian, 2016). However, Indonesian children's mathematics abilities are still poor compared to Singapore, Japan, and Malaysia. According to the 2007 TIMSS survey (in Hamidah, 2021), Indonesian children's mathematical ranks are significantly below those of Japan, with a ranking of 36th and fifth, respectively, and a grade comparison of 397 and 570. According to the 2011 TIMSS assessment, most Indonesian youngsters could barely reach the median level and were far behind other emerging nations such as Malaysia. Thailand and Saudi Arabia are two countries that have recently made headlines (Hamidah, 2021). According to the PISA survey, Indonesian youngsters are falling behind in mathematics. Indonesia had a score of 379 in the 2018 PISA mathematics category, placing it at level 1 behind Singapore (level 4), Japan (level 3), and Malaysia (level 2). (OECD, 2019).

According to Miliyawati (2016), Indonesia lags behind Japan for two reasons: the implementation of a curriculum that does not adapt to student requirements and curriculum conceptions that reflect the growth of educational theory and practice. Since 1947, Indonesia has changed its curriculum ten times to improve the quality of education. Even though Japan and Indonesia have changed their curriculums to increase education quality, the PISA and TIMSS results suggest that Indonesia lags behind Japan. As a result, comprehensive studies in education, particularly mathematics education in Indonesia, are required so that educational stakeholders may identify the core reasons for Indonesian education's poor quality and develop strategies to enhance it in the future (Hamidah, 2021). Comparative studies of the mathematics education systems in different countries (mostly Asian nations) can be conducted to investigate the disparities between the Indonesian and these countries' education systems as a foundation for policymaking in Indonesian education. The results of the TIMSS comparison research, PISA, and the Learner's Perspective Study (LPS) provide significant insights into global educational practice and offer educators chances for mathematical and cultural practice in their nations as a comparative foundation (Clarke et al., 2006).

The challenges outlined at the start have formed the foundation for studying the curriculum and learning mathematics in four nations, namely Singapore, Japan, Malaysia, and Indonesia. The four nations were chosen based on their PISA ratings from 2018. Singapore is at level 4, Japan is at level 3, Malaysia is at level 2, and Indonesia is at level 1. These nations indicate their different PISA score levels, with Singapore at level 4, Japan at level 3, Malaysia at level 2, and Indonesia at level 1. This research looks at several key features of mathematics education and curriculum in each nation. This study aims to compare the mathematics curricula of Singapore, Japan, Malaysia, and Indonesia. The study's findings will likely give helpful information for enhancing Indonesia's curriculum and mathematics education. The results of this study are believed to be beneficial to stakeholders in the field of mathematics education in Indonesia.

2. Research Methods

A literature review or literature study is research that uses a qualitative method. The study's data is derived from secondary sources such as books, journals, and web-based material. Each level of the PISA score is represented by a literature analysis of the mathematical learning process in Singapore, Japan, Malaysia, and Indonesia (level 4 to level 1). Singapore had the highest PISA score in the first category at level four, followed by Japan at level three, Malaysia at level two, and Indonesia at level one, the lowest class among the four nations. The study employs a descriptive method with content analysis tools in papers that reveal similarities and variations in learning mathematics in the four nations. A descriptive study aims to give a clear, objective, systematic, analytical, and critical account and explanation of each country's mathematics learning. The descriptive qualitative approach was carried out in several steps, including coding the data, searching for themes, organizing and defining the data according to the code, and interpreting the findings so that the descriptive analysis and content, similarities, and differences between each country's curricula were presented explicitly.

3. Result and Discussion

3.1. Mathematics Learning Curriculum in Singapore

Schools in Singapore are known for their high standards in terms of teaching and learning activities, as evidenced by comparisons of international workshops such as the Third International Mathematics and Science Study (TIMSS), which shows that most students in Singapore's leading schools already have global standards in mathematics and science subjects (Sutomo). The mathematical ability of students in Singapore has been more advanced because the ability of students to solve problems (problem-solving) is the main goal of learning mathematics in Singapore. Teaching through problem-solving provides opportunities for students to build mathematical concepts and develop their mathematical skills. Problems will lead students to use heuristics to investigate, explore patterns, and think critically. Students must observe, relate, ask questions, find reasons, and draw conclusions to solve problems. Success in solving problems is closely related to the level of one's ability and observation of students' thinking processes.

In 1992 Singapore began to emphasize problem-solving in its curriculum. Mathematical problem solving is centered on learning mathematics, which includes skills, abilities/skills in applying mathematical concepts in various problem situations; as described by the Singapore Ministry of Education, Mathematical problem solving is central to mathematics learning. It involves acquiring and applying mathematics concepts and skills in various situations, including non-routine, open-ended, and real-world problems (Clark, 2009). So, in learning mathematics in Singapore, problem-solving as the main goal of developing Singapore's education curriculum depends on 5 (five) interrelated components (Ministry of Education Singapore, 2006). The five components, namely concepts, skills, processes, attitudes, metacognition, and problem-solving as the center, are depicted in a pentagon called the Singapore Mathematics Curriculum Framework. (Singapore's Mathematics Framework) as figure 1.

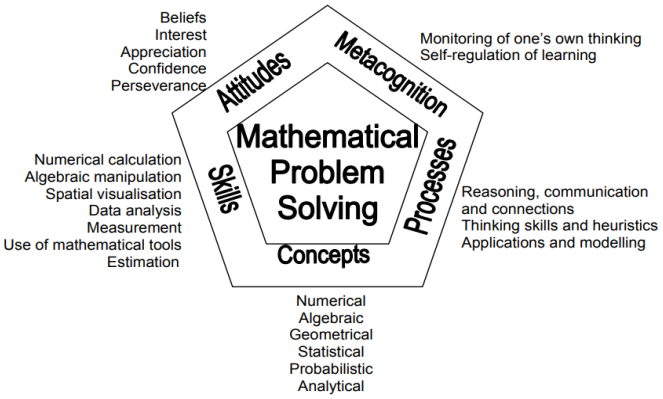

Figure 1. Mathematics framework from the Singapore mathematics curriculum (Ministry of Education Singapore, 2006:2)

If we understand, the abilities included in the power of mathematics, as stated by experts (NCTM, 1989; Baroody, 2000; Zarinnia, & Collis, K., 1990), are not far from the Singapore mathematics curriculum. The framework shows that solving mathematical problems is the main goal of learning mathematics. At the same time, the five components that surround it contribute to the ability to solve mathematical problems. The objectives of the curriculum are described in a syllabus document that contains an outline of the underlying philosophical and curriculum objectives along with the content of the syllabus based on grade level (Sutomo). In the syllabus, the process component (processes) has been added, which focuses on the process of reasoning (reasoning), communication and connection (communication and connection), as well as application and modeling or demonstration (application and modeling) in addition to heuristics or strategies (heuristics) and thinking skills (Ministry of Education, 2006). All these process abilities must be implemented in learning mathematics.

According to Kaur and Dindyal (2010), application and modeling play a vital role in developing mathematical understanding and abilities. Mathematical modeling is formulating and developing a mathematical model to represent and solve problems. Through mathematical modeling, students learn to use various data representations and choose and apply appropriate methods and tools to solve problems. Students' mathematical abilities in Singapore have been more advanced. Students' ability to solve problems (problem-solving) is the main goal of learning mathematics in Singapore. Foong (2002) states that in the mathematics curriculum in Singapore today, the problem-solving ability is the goal of the mathematics teaching and learning process. Furthermore, Foong (2002) argues that teaching through the provision of problems provides opportunities for students to build mathematical concepts and develop their mathematical skills. Problems will lead students to use heuristics to investigate, explore patterns, and think critically. Students must observe, relate, ask questions, find reasons, and draw conclusions to solve problems. Success in solving problems is closely related to the level of one's ability and observation of students' thinking processes.

The curriculum compiler in Singapore is the Ministry of Education (MOE). The Ministry of Education (MOE) ensures the curriculum's balance, rigor, relevance, and responsiveness to meet the needs of the 21st century. One of the methods used is Model Drawing. This model is one of the CPA approaches that have become Singapore's Mathematics approach. The education system in Singapore lies in a bilingual policy (English/Malay/Mandarin/Tamil) and a complete curriculum where innovation and entrepreneurial spirit are highly prioritized.

3.2. Mathematics Learning Curriculum in Japan

After World War II, the Japanese education system was reformed. From the United States, progressive educational ideas were introduced to schools in Japan (Duke, 1986). The school curriculum becomes organized in the environment around children, with lessons aimed at children's activities to solve problems of everyday life (Sekiguchi, 2021). In the 1960s, there was a new development in the field of mathematics in Japan. The learning idea of Jerome Bruner's discovery makes mathematics education interesting by conducting inquiry-based activities (Sekiguchi, 2021; Hino, 2015). In the 1980s, the National Council of Teachers of Mathematics (NCTM) (1980) suggested that the principle of learning mathematics is "teaching and learning mathematics through problem-solving" (Soma, 2017). Japan established a modern government in the late nineteenth century and introduced a current education system that imitates the education system of Western countries. Since then, a whole class teaching approach with the knowledge transmission learning model has been applied in classrooms in Japan (Sekiguchi, 2021). The implementation of mathematics learning in Japan, which is based on problem-solving, takes place through four phases described by Polya

(1887-1985): (a) Understanding the problem, (b) Designing a plan, (c) Solving problems, and (d) Re-examining (Fujji,2018).

Japan realizes that there are many advantages students get from teaching, such as finding solutions to problems. In the learning process, teachers provide meaningful teaching materials and practice questions that hone students' ability to find, so the learning process is more than just knowing the correct answer (Shinno & Mizoguchi, 2021; Hamidah et al., 2021). The purpose of such a learning process is to invite students to be involved through "hatsumon," namely questions that lead to a concept. So that students in Japan can see the relationship between teaching materials and the situation around them. In the process, students become motivated, and self-confidence appears. In mathematics textbooks used in the Japanese curriculum, it is known that "hatsumon" has emerged from the beginning of the material being made, and the context appears in existing application questions (Hamidah et al., 2021).

The Japanese mathematics curriculum was developed by considering the goals set in mathematics education, which aims to provide students with a variety of meaningful experiences that can improve students ability to think logically and creatively (Miliyawati, 2016). Furthermore, it is known that the Japanese state mathematics curriculum does not give students a target to master all the specified material but instead targets the depth of the learning process delivered, quantity (amount) and measurement, geometric shapes, and relations. There is less time to teach mathematics in Japan than in Indonesia. Mathematics textbooks in Japan use original pictures of places, objects, and other things that have relativity to the content or lessons presented in the book (Shinno&Mizoguchi, 2021).

Guidance on the content of learning in Japanese schools is contained in the Gakusyuushidouyouryo. This document contains a complete description of the objectives of learning in schools, subject matter, moral education, and specific activities related to schools. Gakuyuushidouyouryou can be said to be the minimum standard that public schools, public schools, and private schools must achieve. Gakuyuushidouyouryou was first issued in 1947, coinciding with the birth of the Education Law in Japan (Sutomo).

The curriculum planning section prepares the curriculum in Japan in the Ministry of Education in Japan called Monkashō or MEXT (Ministry of Education, Culture, Sports, Science, and Technology). The Curriculum Commission consists of representatives from the Teacher Union, practitioners and education experts, industry representatives, and MEXT. The preparation of the Japanese curriculum is more emphasized in the education system in schools, not on changing subjects or teaching methods. Its flexible and responsive nature in implementing the curriculum allows educators to make developments and adjustments at the implementation level in the classroom (Miliyawati, 2016).

The Japanese curriculum has development characteristics that try to adapt to the conditions and thoughts of Japanese society. These changes also follow developments that occur in the international world. Meanwhile, curriculum development emphasizes the education system in schools, not changing subjects or teaching methods (Hamidah et al., 2021). Meanwhile, the development of Japan's mathematics education curriculum was based on philosophy. In contrast, mathematics learning was carried out according to the latest mathematics learning theories and depended on 5 (five) interrelated components. The five components are concepts, skills, processes, attitudes, metacognition, and problem-solving. Mathematics learning in Japan emphasizes problem-solving, making problem-solving the basis for learning mathematics in the classroom (Soma, 2017). In addition, the approach used in learning mathematics is open-ended, problem-solving, and discovery. Japanese teachers use three teaching principles, namely: (a) tanoshii jugyou (class should be fun), (b) wakaru ko (children must understand), and (c) dekiru ko (children must be able to) (Miliyawati, 2016).

The learning method used in Japan is peer learning or lesson study (Fujji, 2018). Mathematics learning in Japan uses open-ended, problem-solving, and contextual methods. According to (Novikasari, 2013), one of the traditions used in education in Japan is Lesson study. Lesson study comes from the Japanese term "Jugyokenkyu," an approach used to improve the quality of learning. Lesson study implemented by Japan is a

scientific activity for teachers to experiment in developing and testing their learning theories and spreading suitable activities.

As a result of the development and experimentation on the application of Lesson study, mathematics teachers in Japan divide two types of theories in teaching, including a problem-solving approach and an open-ended approach. A problem-solving approach is an approach that is applied to develop students' ability to learn mathematics with principles by and for themselves in Japan. In other words, mathematics comes from the students themselves; for the students, the knowledge is also developed. It is a learning process that teaches how to learn, meaning that students learn to build mathematics by and for themselves.

Furthermore, according to (A. Biliya, 2015), open-ended is an approach to learning that starts activities that confront students with open problems in its application. Furthermore, education directs students to use various correct answers to the concerns provided to provide meaningful experiences to students while finding something during the learning process. In general, mathematics learning takes place in Japan; as noted by Stevenson & Nerison-Low (2002), the structure of mathematics learning in Japan emphasizes presenting practical problems, explaining differences in student solutions, and asking other students to comment on and evaluate the effectiveness of student completion. Then brings the mathematics lesson to a summary and closes by stating the rules that underlie solving the mathematical problems presented. Generally, the mathematical problems presented to students are problem-solving.

3.3. Mathematics learning curriculum in Malaysia

The education system in Malaysia has the same pattern as in Indonesia, where the system changed from the pre-independence period to the post-independence period. Salleh (in Novikasari, 2013) states that the Malaysian education curriculum before independence refers to the British education system, where each school has a different curriculum. National curriculum uniformity was only implemented after the independence period. Currently, Malaysian education refers to the philosophy of national education, which states that Malaysian education is defined as a continuous effort to develop a comprehensive and comprehensive individual potential to give birth to a balanced human being in terms of intellectual, spiritual, emotional, and physical, based on trust and obedience to God (Ministry of Education Malaysia, 2014). The Malaysian education philosophy encourages students to become agents of supporting the prosperity and harmony of the nation and state through competency development, including intelligence, spiritual, emotional, and physical (Novikasari, 2013).

The development of the mathematics curriculum is in line with the Malaysian education curriculum, which has undergone several phases of change. Noor Azlan (in Zahid and Wahid, 2017) states that the stages of development of the mathematics curriculum in Malaysia are divided into three stages, namely the stages before the 70s, the stages after the 80s, and the stages after the 90s. For example, the first stage before the 70s used the Old Middle School Curriculum (KLSM), the second stage after the 80s used the New Middle School Curriculum, and the third stage after the 90s used the Middle School Integrated Curriculum (KBSM). In addition to the curriculum changes presented by Azlan, mathematics education in Malaysia has also experienced adjustments to the application of mathematics learning with English as the language of instruction since 2003. However, it was again replaced by using the same language of instruction as other subjects in 2011. The latest change in the mathematics curriculum in Malaysia refers to the standard curriculum, which is divided into two, namely the low school standard curriculum (KSSR) and the high school standard curriculum (SKKM) 2013. The implementation of KSSR and KSSM aims to balance the rapid development of the world economy and the massive growth of information technology.

Changes in the mathematics learning curriculum in Malaysia since the 70s include curriculum content and content changes. The content and content of the curriculum in the early stages has an emphasis on traditional mathematics, where the focus is on numeracy skills. The targeted abilities include the ability to count with four basic operations, logarithmic tables, trigonometry, and so on. The development of traditional mathematics skills in the curriculum aims to improve students' ability to count quickly and accurately. The teaching pattern in the conventional mathematics stage provides excellent development in the ability to imitate and repeat material but is limited in developing students' thinking skills (Novikasari, 2013). The teaching pattern in the first stage resulted in the development of learning products for mathematical thinking, not mathematical thinking processes. The implementation of modern mathematics in Malaysia has been introduced in learning since the late 1970s. Changing the teaching approach based on imitation and repetition to understand concepts was introduced in the mathematics curriculum. In addition, mathematics materials such as sets, statistics, matrices, and vectors are also taught to students.

The implementation of the Low School Standard Curriculum (KSSR) and the Middle School Standard Curriculum (KSSM) in 2013 has replaced the Integrated Curriculum with the aim that the quality of teaching in schools is comparable to international standards (Zaid & Wahid, 2019). The focus of learning using KSSR and KSSM is on forming students with a mathematical mindset (Zaid & Wahid, 2019; Ministry of Education Malaysia, 2015; Ministry of Education Malaysia, 2014). The mathematical framework includes four elements, namely the areas of learning, values, skills, and processes. For example, in KSSM, learning areas include operations and numbers, measurement and geometry, functions and algebra, statistics and probabilistic, and discrete mathematics. Values in the high school mathematics framework focus on global matters, while the expected abilities are math skills, 21st-century skills, and higher-order thinking skills. The process includes realistic and comprehensive problem-solving, mathematical meaning, and communication.

The lower school curriculum makes operations and numbers, measurement and geometry, algebra, and statistics-probabilistic the areas of learning. Mathematics learning at the elementary school level focuses on problem-solving by connecting real life to education. Attitudes and values emphasized in SKKR include responsiveness, interest, appreciation, patience, and endurance. Meanwhile, the expected abilities include mathematical ability, analysis, problem-solving, problem investigation, mathematical communication, and the use of technology. Novikasari (2013) states that curriculum changes in Malaysia are used to adapt to social, economic, technological, and so on. For example, technological developments can be used to support student learning processes. Calculating technology such as calculators and computers can facilitate the method of calculating students when determining solutions to mathematical problems.

3.4. Mathematics Learning Curriculum in Indonesia

Indonesia's national curriculum develops according to the development of theory and practice in the field (Miliawati, 2017). The result of mathematics learning in Indonesia cannot be separated from the history of the curriculum. The development of mathematics until 1968 emphasized geometry learning on numeracy skills, prioritizing memorization, paying less attention to the relationship with the following material, and providing the material that did not foster student curiosity (Rasiman, 2016). Furthermore, before 1975 developed, the traditional mathematics curriculum. This year one of the compulsory subjects in school is mathematics. This formal mathematics learning emphasizes counting skills and how to count rather than why something is calculated. In addition, the learning process also highlights the memorization method, and students must accept the sequence of operations without reason. The first material taught to students is natural numbers, addition whose results are still below ten, subtraction where the difference between the two numbers is positive, and so on (Russefendi in Simajuntak et al., 2021).

Furthermore, modern mathematics learning (Curriculum 1975). The development of technology and the development of learning theories by J. Piaget, W. Brownell, JS Bruner, RM Gagne, and others led to the emergence of this modern learning model. Brownel suggests that learning mathematics is meaningful learning. This theory is in line with Gestalt theory which states that memorization exercises are essential, but this method can be applied after understanding is embedded in students' minds (Simajuntak et al., 2021). Based on the development of the learning theory, various weaknesses of traditional mathematics learning have begun to appear. Therefore, the 1975 curriculum emerged, which aimed to overcome the multiple weaknesses that existed in the previous curriculum.

In 1984 the Indonesian government developed a new curriculum, namely the 1984 curriculum. The development of mathematics learning was influenced by new technologies abroad, such as calculators and computers. This has resulted in an influence on mathematics in Indonesia. There are several reasons for implementing this new curriculum, namely too many materials, differences in educational progress between regions in terms of technology, differences in curriculum programs between one party and school implementers, and field needs on the other; the curriculum material is not by the abilities of students. In addition, a close character in the curriculum is CBSA (Simajuntak, 2021).

Mathematics learning in the 1994 curriculum was made as a complement to the previous curriculum. There have been many international mathematical activities this year, such as the mathematics olympiade. However, Indonesia still rarely gets medals. This curriculum has a learning structure that adapts to children's development, and mathematical learning models related to life have begun to be presented in various subjects. This is a consideration so that students can solve problems faced in everyday life. Mathematics learning in 1975 emphasizes the text on the material but does not forget contextually related to the material being studied (Rasiman, 2016).

Furthermore, mathematics learning in a Competency-Based Curriculum (Curriculum 2004). The mathematics learning model at KBK has the following objectives: 1) Train students' ability to think and reason to conclude, 2) Develop students' creative activities that involve imagination, intuition, and discovery, 3) Develop problem-solving skills, convey information or communicate ideas. (Rasiman, 2016). In 2006 there was a change in the KBK curriculum to the 2006 curriculum, known as the Education Unit Level Curriculum (KTSP). The implementation of mathematics learning in the KTSP is the implementation of knowledge based on the KTSP. The teacher's task in implementing the KTSP is that the teacher makes it easy for students to learn. In addition, this allows students to adapt to the external environment to behave by content and graduate competency standards in the KTSP (Wulandari, 2012).

In early 2013 the curriculum changed to the 2013 curriculum. Mathematics learning in the 2013 curriculum requires students to have High Order Thinking Skills. This ability can be achieved using several learning models, including discovery, problem, and project-based learning (Rasiman, 2016). The material in this curriculum is presented from more accessible to complex material. The assessment is carried out by referring to the performance-based students' abilities and giving students the freedom to build their thinking. The material presented in the 2013 curriculum is not too much different from the KTSP curriculum, but there are few additions or subtractions of material. For example, in high school material, initially, students only studied data and statistics, and in the 2013 curriculum, probability, data processing, and statistics were added (Hamidah, 2021).

The development of the mathematics curriculum in Indonesia is based on specific competencies, and knowledge development is child-centered. Some of the development of students' ability to solve problems include the ability to think logically, critically, and creatively and communicate mathematics. From the scope of the material taught in elementary school, mathematics includes numbers, geometry and measurement, data processing, problem-solving, reasoning, and communication. Then the mathematics material taught in junior high school contains numbers, algebra, geometry and measurement, probability and statistics, problem-

solving, reasoning, and communication. Meanwhile, mathematics material for the high school includes algebra, geometry and measurement, trigonometry, probability and statistics, calculus, mathematical logic, problem-solving, reasoning, and communication (Hamidah, 2021).

Table1. Comparison of Singapore, Japan, Malaysia, and Indonesia Mathematics Curriculum

Comparison	Singapore	Japan	Malaysia	Indonesia
Goals and Objectives	Preparing Singapore's young generation for the new conditions and problems they will face in the new millennium	Fully develop personality, develop individuals both physically and mentally, who love truth and justice, respect other people's values, appreciate work, have a sense of responsibility, and are moved by the spirit of independence as the founder of a peaceful country and society.	Continuous effort to develop individual potential thoroughly and comprehensively to give birth to people who are balanced in terms of intellectual, spiritual, emotional, and physical, based on trust and obedience to God	Preparing Indonesian people to have the ability to live as individuals and citizens who are faithful, productive, creative, innovative, effective, and able to contribute to the life of society, nation, state, and world civilization.
Content	For elementary school level (Numbers, Measurement, reasoning, communication) For junior high school level (Numbers, Geometry, statistics, functions). For high school level (Numbers, Functions, Geometry, Analysis, Probability, and Statistics)	Elementary school material (Numbers and their operations, Quantity (amount) and measurement, Geometrical shapes, Quantity relations Junior High School materials (Numbers and mathematical expressions - symbols, Geometrical forms, Functions, Data processing (statistics) SMA (Numbers, Geometry, Measurement, analysis)	The Low School Standard Curriculum (KSSR) includes Numbers and Algebra, Geometry and Measurement, and topics on Statistics, Probability, Algebra, Geometry, Trigonometry, and Calculus. For the Secondary School Standard Curriculum (KSSM), the areas of learning include operations and numbers, measurement and geometry, functions and algebra, statistics and probabilistic, and discrete mathematics.	The coverage of elementary school material includes numbers, geometry and measurement, data processing, problem-solving, and reasoning and communication. Junior high school materials range includes numbers, algebra, geometry and measurement, probability and statistics, problem-solving, and reason and communication. Coverage of material for the high school includes algebra, geometry and measurement, trigonometry, probability and statistics, calculus, mathematical logic, problem solving and reasoning, and communication.
Teaching Method	Problem-solving-based learning in the pentagon framework	Applying the peer tutoring method (Peer learning) or what is called Lesson Study, an	Applied Problem based/Project Based, Problem-solving, Inquiry-based	Using the scientific method (observing, questioning, experimenting,

	open-ended, problem-solving, and contextual approach	Learning, Constructivism	associating, communicating),

4. Conclusion

According to the discussion above, Indonesia, Singapore, Japan, and Malaysia have all undergone various curriculum revisions, including the mathematics learning curriculum. This curriculum revision was created to enhance the quality of education and the previous curriculum in terms of mathematical learning materials studied by Indonesian students, who studied somewhat more than Singapore, Japan, and Malaysian students. Furthermore, each country has its own set of learning methods. Singapore's mathematics learning approach stresses problem-solving skills, whereas Japan utilizes the peer tutoring method (Peer learning) or Lesson Study, and Malaysia emphasizes conceptual knowledge. Indonesia has shifted away from traditional practices and toward scientific ones.

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