COMPARATIVE ANALYSIS OF THE APPLICATION OF THE K13 CURRICULUM AND THE INDEPENDENT CURRICULUM IN MATHEMATICS LEARNING

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ABSTRAK

Kurikulum merupakan landasan fundamental dalam penyelenggaraan pendidikan. Perkembangan zaman dan tuntutan globalisasi saat ini yang menjadikan kurikulum di Indonesia mengalami perubahan. Kurikulum 2013 (K13) telah berlaku sejak tahun 2015, dan kini telah tergantikan dengan Kurikulum Merdeka (KM). Penelitian ini ditujukan untuk mengatahui perbandingan K13 dan KM dalam pembelajaran matematika. Metode yang digunakan dalam penelitian ini berupa Systematic Literature Review (SLR) yang bertujuan untuk menarik kesimpulan dari berbagai penelitian yang terkait tentang perbandingan penerapan kurikulum K13 dan kurikulum merdeka pada pembelajaran matematika. Hasil dari penelitian ini menunjukkan bahwa terdapat perbedaan mendasar antar K13 dan KM dalam pembelajaran Matematika. Perbedaan tersebut meliputi tujuan pembelajaran, struktur kurikulum, pendekatan pembelajaran, metode penilaian, dan peran guru. Pada K13, tujuan pembelajaran matematika berfokus pada penguasaan kompetensi dasar dan kompetensi inti. Struktur kurikulum K13 bersifat hierarkis dan terstruktur. Pendekatan pendekatan pembelajaran yang digunakan dalam K13 adalah saintifik, tematik, dan inkuiri. Metode penilaian dalam K13 meliputi penilaian formatif, penilaian sumatif, dan penilaian autentik. Peran guru dalam K13 sebagai fasilitator pembelajaran. Sedangkan pada KM, tujuan pembelajaran matematika berfokus pada pengembangan karakter dan profil pelajar Pancasila. Struktur kurikulum KM bersifat fleksibel dan

berpusat pada murid. Pendekatan pembelajaran yang digunakan dalam KM adalah pedagogi aktif, pembelajaran berdiferensiasi, dan pembelajaran berbasis proyek. Metode penilaian dalam KM meliputi penilaian formatif, penilaian sumatif, dan sessmen formatif. Peran guru dalam KM sebagai fasilitator, motivator, dam inspirator. Dari penelitian ini, mendapati kesimpulan bahwa adanya kelebihan dan juga kekurangan pada penerapan K13 dan KM pada pembelajaran matematika. Penelitian ini diupayakan bisa memberi manfaat dan juga informasi yang berguna dalam bidang pendidikan guna memajukan kualitas pembelajaran matematika yang ada di Indonesia.

Kata kunci : kurikulum K13, kurukulum merdeka, pembelajaran matematika.

ABSTRACT

The curriculum is a fundamental foundation in the implementation of education. The development of the times and the current demands of globalization have made the curriculum in Indonesia change. The 2013 Curriculum (K13) has been in effect since 2015, and has now been replaced by the Merdeka Curriculum (KM). This research aims to find out the comparison of K13 and KM in learning mathematics. This research uses a method in the form of Systematic Literature Review (SLR) which aims to draw conclusions from various related studies on the comparison of the implementation of the K13 curriculum and the independent curriculum in mathematics learning. This research found that there are fundamental differences between K13 and KM in learning mathematics. These differences include learning objectives, curriculum structure, learning approaches, assessment methods, and teacher roles. In K13, mathematics learning objectives focus on mastering basic competencies and core competencies. The K13 curriculum structure is hierarchical and structured. The learning approaches used in K13 are scientific, thematic, and inquiry. Assessment methods in K13 include formative assessment, summative assessment, and

authentic assessment. The role of the teacher in K13 is as a learning facilitator. Whereas in KM, the learning objectives of mathematics focus on character development and the Pancasila learner profile. KM's curriculum structure is flexible and student-centered. The learning approaches used in KM are active pedagogy, differentiated learning, and project-based learning. Assessment methods in KM include formative assessment, summative assessment, and formative assessment. The role of the teacher in KM is as a facilitator, motivator, and inspirer. From this research, it was concluded that there are advantages and disadvantages in the application of K13 and KM in mathematics learning. This research is sought to provide benefits and useful information in the field of education in order to advance the quality of mathematics learning in Indonesia.

Keywords: curriculum K13, independent curriculum, math learning.

INTRODUCTION

High quality human resources are strongly influenced by education. Education is necessary for a person to broaden his horizons in changing behavior and is used to support the development of a country, improving the quality of education will have a positive impact on the dignity of the nation (Nurfadilah et al., 2024). According to Syahidin in Hermawan et al (2020), education has a dual role, namely as a medium for transferring knowledge and shaping character. Therefore, education has a dynamic nature, characterized by continuous change to adapt to the times, the needs of society, and the global context.

According to Muhammad Irsad in Hermawan et al (2020) the purpose of this change is to improve education itself by adding to existing concepts. Change is something that cannot be rejected. If change can be avoided, changes are not only directed at some areas of lower education, but at all parts of the implementation of the education curriculum without exception. Therefore, the national curriculum continues to develop in accordance with the development of the country (Hermawan et al., 2020).

Sauri in Nurfadilah et al (2024) said that a changed curriculum in a country shows progress in education. The curriculum is an important component of the education system and serves as a tool to achieve national education goals. The curriculum helps educational planners carry out their duties to achieve educational goals. The curriculum is an important part of the educational structure because it holds an important role in the success of teaching and learning programs. (Hermawan et al., 2020)

Curriculum is a learning plan composed of various components about the subject and various work procedures designed to achieve organizational and national goals. Murray Print defines curriculum as a deliberate and structured learning plan provided to learners by educational institutions. The curriculum in Indonesia has been changed eleven times due to needs and technological advances. Curriculum development must consider the diversity of characteristics and abilities of learners at each level of education, as well as ensure its relevance to the needs of the world of work (Aulia et al., 2023). This curriculum change is

usually caused by a change of education minister. The curriculum in Indonesia has changed eleven times due to changing needs and technological advances. These changes occur after a change of education minister, although this does not necessarily mean that the curriculum must be changed every time. (Panginan & Susianti, 2022)

Curriculum changes are made with the aim of improving the quality and standard of education in the country and making it on par with curricula around the world. In Indonesia, the cycle changed in 1947, 1952, 1964, 1968, 1973, 1975, 1984, 1994, 1997, 2004, 2006, 2013, and 2022. The results of international studies on the ability of Indonesian students at the international level, such as TIMS (Trends in International Math and Science) and the Program for International Test Participants (PISA), as well as the government's own policies that encourage curriculum changes so that the Journey of curriculum changes (1994, KBK, KTSP, 2013 Curriculum) are clear evidence of the government's dedication in advancing education in Indonesia. (Dwi, 2023). The 2013 curriculum and the independent curriculum will be discussed in this research. Curriculum 2013 emphasizes competency-based education and educational character to improve the integration of attitudes, skills, and knowledge. As a result, the formation of learner competencies and character is the focus of curriculum development. Integrated subjects, the scientific approach, and authentic assessment are forms of the 2013 curriculum that are used. The scientific approach uses experimentation, reasoning, and student engagement, and integrated subjects combine several subjects into one subject. Authentic assessment directs students to demonstrate their competencies and skills in everyday life (Hajaroh & Adawiyah, 2018).

Curriculum 2013 incorporates mathematics as an integrated subject and offers a self-directed learning approach that is distinctly different from previous curricula. However, the implementation of this curriculum faces several challenges. These include an increase in the number of lessons, the introduction of new classifications related to learning mathematics in secondary schools, and teachers' lack of understanding of Curriculum 2013. (Nurfadilah et al., 2024). Mathematics in the independent curriculum is known for its complex material, making the lesson considered quite difficult and very frightening for students.

Therefore, teachers are asked to create an atmosphere of learning mathematics that is fun and encouraging. (Sasmita et al., 2024)

The free curriculum starting in 2022 is the curriculum currently in use. Freedom to think and develop is at the core of the free curriculum. Muhajir et al. (2021) state that the idea of independent education promoted by Nadiem Awnar Makariem, the Minister of Education and Culture recently, allows more people to carry out teaching activities. Giving freedom in education is expected to give birth to a young generation that is resilient, creative, and adaptive to changes in the post-pandemic era. (Harefa & Harefa, 2023). The pandemic caused changes in education such as from in-person learning to digitally-based distance learning forcing teachers to understand the importance of technology in the twenty-first century and its application in learning. As a result, other elements of education are also changing, including new schemes in lesson planning (Panginan & Susianti, 2022).

Mathematics lesson planning for the independent curriculum must be based on the KOSP made by the education unit. Mathematics learning should be student-centered and adapted to the characteristics of students. To achieve a positive learning environment and learning achievement, teachers must create an effective and enjoyable learning atmosphere for students is a fundamental cornerstone in the educational process. It is expected that students feel comfortable while learning and are not asked to exceed their abilities. Therefore, the independent curriculum is a development of the previous curriculum.

The independent curriculum is a review of the 2013 curriculum. It combines Learning Outcomes (CP), Learner Objectives (TP), and Flow of Learning Objectives (ATP). In the 2013 curriculum, Core Competencies and Basic Competencies (KI-KD) and Syllabus are replaced by ATP in the independent curriculum. This independent curriculum is a revision of the previous curriculum, but there are still problems when implementing it. The main differences between the 2013 Curriculum and the Independent Curriculum are CP, TP, and ATP. Different from KI -KD and Syllabus. The Merdeka Curriculum uses the term Phase, Phase A-F, to divide the sections. This is different from the way Curriculum 2013 does it with the Grade system (Aulia et al., 2023). This shows

that the 2013 curriculum and the independent curriculum have their own comparisons. The implementation comparison between the 2013 Curriculum and the Merdeka Curriculum is interesting to study. An in-depth analysis of the curriculum's basic framework, competencies, structure, assessment, and implementation can help understand the differences between the 2013 Curriculum and the Merdeka Curriculum in Primary Schools. The comparison between the implementation of the 2013 curriculum and the independent curriculum is quite interesting to study. Therefore, researchers are interested in making a comparison of the implementation of the 2013 curriculum and the independent curriculum in terms of learning objectives, curriculum structure, learning approaches, assessment methods, and teacher roles. In this article, researchers will systematically review the literature using the Systematic Literature Review (SLR) method to analyze the comparison of the implementation of the 2013 curriculum and the independent curriculum in mathematics learning.

DISCUSSION

Based on the search results on Google Scholar, 10 sources were taken related to the effectiveness of digital learning platforms to improve problem solving skills. The 10 sources obtained by the author are then classified in Table 1.

Table 1

No.	Name	Additional information
1	(Dwi, 2023)	Analisis Perbandingan Implementasi Kurikulum 2013 dan Kurikulum Merdeka di SD Negeri 6 Pangkalpinang
2	(Oktavia et al., 2023)	Problematika Penerapan Kurikulum Merdeka Belajar Pada Pembelajaran Matematika Di SMKN 2 Pacitan
3	(Lestari, 2022)	Problematika Implementasi Kurikulum 2013 dalam Pembelajaran Matematika di Tingkat Sekolah
4	(Saraswati & Sulistyani, 2023)	ANALISIS PELAKSANAAN PEMBELAJARAN MATEMATIKA PADA KONTEKS KURIKULUM MERDEKA DAN HASIL BELAJAR SISWA SMP N 2 GIRIMULYO

No.	Name	Additional information
5	(Rahmah et al., 2023)	Kendala-Kendala Implementasi Kurikulum 2013 Pada Pembelajaran Matematika Di Tingkat Sekolah Menengah Atas
6	(Lutfiana, 2022)	PENERAPAN KURIKULUM MERDEKA DALAM PEMBELAJARAN MATEMATIKA SMK DIPONEGORO BANYUPUTIH
7	(Zafirah et al., 2024)	Studi Perbandingan Implementasi Kurikulum Merdeka dan Kurikulum 2013 Pada Mata Pelajaran Matematika: Literature Review
8	(Sasmita et al., 2024)	Implementasi kurikulum merdeka dalam pembelajaran matematika kelas VIII di SMP Negeri 1 Pariaman
9	(Kusumah et al., 2024)	Persepsi Guru Matematika Terhadap Implementasi Kurikulum 2013 Dalam Pembelajaran Matematika DI SMP
10	(Mowendu et al., 2019)	Evaluasi Implementasi Kurikulum 2013 pada Mata Pelajaran Matematika Di SMP Negeri

Based on research presented by the source [1], the Merdeka Curriculum has several fundamental differences with the 2013 Curriculum in mathematics learning at SD Negeri 6 Pangkalpinang. These differences include the curriculum structure (in the 2013 curriculum, subjects are grouped into groups A and B, basic competencies are determined by the government. Whereas in the independent curriculum, the structure consists of intracurricular and co-curricular, essential material is learned by students, with simplified lessons). teaching and learning process (in the 2013 curriculum, lesson plans are made thematically, but learning is not fully thematic, while the subject approach is the basis for implementing learning in the Merdeka Curriculum. For PAI, PJOK, and English, learning is carried out per subject). learning methods and media (in the 2013 Curriculum and Merdeka Curriculum using various methods). Assessment (the 2013 curriculum has KKM with the principle of complete learning, while the independent curriculum does not have KKM but the criteria for achieving learning objectives).

Based on the source to [2] The Merdeka curriculum in mathematics learning brings several important changes compared to the 2013 curriculum. Here are some important points: Learning outcomes (in the 2013 curriculum refer to SKL, KI, and KD and are designed to strengthen competency development This learning becomes a guide for teachers and students in the learning process. The Merdeka Curriculum provides opportunities for students, teachers, and educational institutions to innovate in learning. The flexibility of the Merdeka Curriculum allows adjustments to learning to suit students' needs and interests, as well as school conditions. Teachers help students learn by encouraging them to ask questions, interact and cooperate with classmates. Mathematics learning is not only focused on mastering the material, but also on building students character. The Pancasila Student Profile becomes a reference in the development of student character. learning is carried out in a 2-way manner, teachers and students interact with each other in the learning process. Students are encouraged to actively ask questions and find their own answers. Teaching and learning is carried out using interactive media digitalization of learning is highly recommended to increase student interest in learning mathematics.

Source to [3] Based on the information provided, there are several obstacles in the implementation of mathematics learning with the 2013 curriculum, namely lack of emphasis on higher level thinking, namely teachers focus more on comprehension and application questions, ignoring material enrichment through critical and creative thinking. Student and teacher difficulties students lack of understanding of the main concepts of curriculum 2013 is an obstacle in the teaching and learning process, Teachers have difficulty implementing curriculum 2013 because the material is too much and students lack understanding. The misalignment between prerequisite and advanced material in compulsory and specialization mathematics results in the inefficiency of the teaching and learning process, so that students have difficulty in understanding the concept of specialization mathematics. Lack of student handbooks inadequate practice questions in student books and low student literacy skills due to book limitations. Lack of student attention and difficulty understanding material: Low analytical and adaptive thinking skills cause students to pay less attention to learning;

students and the deputy principal of the curriculum section assessed that students find it difficult with the questions contained in the mathematics textbook; students ability to analyze problems has not been balanced with the ability to think critically and creatively in finding solutions.

Source to [4] Based on the information provided, the following conclusions regarding the use of merdeka curriculum in learning mathematics: contains many positive aspects including, planned learning, starting with prayerchecking attendance, use of learning media, contextual learning approach, group learning group presentation, affirmation of material providing practice questions, closing with prayer. The implementation of mathematics learning in the classroom shows several indicators of implementing the merdeka curriculum, such as: focus on character development (Prayer at the beginning and end of learning), Student-centered learning (Use of contextual problems, group learning, and presentations), Application of assessment (Providing practice questions).

Source [5] According to the data collected, there are a number of problems that hinder the implementation of Curriculum 2013 in mathematics learning at senior secondary level schools. These include problems at the planning stage, where teachers still fail to create lesson plans, problems at the implementation stage, where teachers face difficulties adjusting lesson plans to classroom practice, the scientific approach used is less effective, and students are not actively involved in learning.

Based on research conducted by Sumber [6], the implementation of learning with an independent curriculum has several objectives such as maximizing student potential, motivating students to learn according to learning styles, advancing traditional pedagogy, improving the quality and enjoyment of teaching and learning. In addition to the objectives, it also has principles which include, Based on the KOSP prepared by the education unit, learning is focused on students by paying attention to their characteristics with the aim of creating an effective and enjoyable learning atmosphere, where students are the center of learning, Meeting students' needs and abilities, Paying attention to the

characteristics of the material and students, Using the concept of fun mathematics learning, Giving students freedom to express themselves, Understanding students' circumstances, talents, and interests. Then from the implementation of the independent curriculum, it is hoped that a positive learning environment can be achieved, learning outcomes can be achieved, students feel comfortable in learning, teachers understand the situation of students, their talents and interests. To create effective and enjoyable learning, teachers need to apply creative and innovative methods, as well as provide space for students to express themselves and learn according to their learning styles; Teachers should conduct regular learning evaluations to find out student progress and make improvements if needed.

Source [7] Comparison of the 2013 Curriculum and the Independent Curriculum in Mathematics Learning: the 2013 curriculum has characteristics by using a sanitive approach; cognitive, affective, and psychomotor assessments; 4C indicators (Critical Thinking, Creative, Communication, Collaboration); Student centered. While in the independent curriculum differentiated learning is carried out; Profile of Pancasila Students; KOSP (Operational Curriculum for Education Units); Interest and desire to learn from students. The similarities between the implementation of the 2013 curriculum and the independent curriculum are: Both emphasize the development of 21st century skills; Both use a scientific approach; Both conduct cognitive, affective, and psychomotor assessments. In addition to the similarities in the application of the curriculum, there are differences, including: The Merdeka Curriculum emphasizes more on learning differentiation and the development of the Pancasila Student Profile; The Merdeka Curriculum provides flexibility for teachers in designing learning tools.

Source [8] Based on the description given, the following are conclusions related to the application of Merdeka Curriculum in mathematics learning has advantages among others: One of the principles of the Merdeka Curriculum is that learning is student-centered, allowing students to learn independently and actively. Authentic assessment, which is carried out during the learning process, can show how well students understand the material. Although the independent characteristic itself has advantages, there are also disadvantages. For example,

teachers do not implement differentiated learning, which is important to accommodate the different learning needs of each student; the learning process is not in accordance with the open module, which can cause learning to be ineffective and not achieve goals; The media and teaching materials used are less varied.

Source [9] the implementation of the Merdeka curriculum provides several potential benefits for learning mathematics, namely: Increase enthusiasm and joy of learning, where students carry out activities outside the room in the form of projects or assignments, so that learning becomes more fun and not monotonous; Increase interest in learning, The use of various learning media, such as videos, images, and games, can attract students interest in learning; Develop learning independence, Students are encouraged to seek information and solve problems independently; Increase learning motivation, Students are motivated because the concept of learning that is related to the times and everyday life can make students more motivated to learn. On the other hand, the implementation of Merdeka Curriculum also has several challenges, namely: Requires preparation and training for teachers: Teachers need to understand the Merdeka Curriculum and how to apply it properly in mathematics learning; Requires support from parents and schools: parents and schools need to provide support for independent curriculum-based learning, especially in mathematics subjects to teachers and students. Requires adequate teaching materials and media: teaching materials and media used need to be varied and according to student needs.

Source [10] The 2013 curriculum focuses on several important elements in mathematics learning, namely: The scientific approach, where teachers must apply the scientific approach in mathematics learning activities, which consists of observing, trying, questioning, communicating and associating; Integrated thematic learning, teachers should be able to link mathematics learning materials with other subject matter with everyday life; Utilization of learning media, Teachers can make variations in learning media to support mathematics learning. However, in its implementation, there are several challenges faced by teachers, namely: Difficulties in applying the scientific approach consistently, Lack of utilization of learning media and also Time constraints.

CONCLUSION

Based on the various sources that the author uses, it can be concluded that the comparison of the application of the 2013 Curriculum and the independent curriculum in learning mathematics lies in the characteristics, advantages and disadvantages and for the application of the independent curriculum itself has challenges. The characteristics of the 2013 curriculum are that learning is carried out with a scientific approach, assessment is seen from cognitive, affective, and psychomotor aspects, using the 4C indicators (Critical Thinking, Creative, Communication, Collaboration), and also student-centered teaching. Furthermore, the advantages of the 2013 curriculum are that it can develop 21st century skills, uses a scientific approach, and conducts cognitive, affective, and psychomotor assessments. In addition to these advantages, there are also weaknesses in the form of less emphasis on learning differentiation and the development of the Pancasila Student Profile and also less flexibility for teachers in designing learning tools.

The independent curriculum itself also has characteristics with differentiated learning, Pancasila Learner Profile, KOSP (Education Unit Operational Curriculum), interests and desires of students. Furthermore, there are also advantages, namely encouraging students to learn independently and actively, applying authentic assessment, and increasing their curiosity in learning and the joy of learning, increasing learning interest, developing learning independence, increasing learning motivation. Over time there are also some shortcomings such as, The learning process is not always in line with the teaching modules provided. The implementation of student-centered learning has not reached the optimal level, and teachers have not fully implemented differentiated learning. In addition, the learning model used is still less varied, the media and teaching materials used are less varied. Although there are advantages, on the other hand, the implementation itself has various challenges, namely requiring preparation and training for teachers, requiring support from schools and parents, requiring adequate media and teaching materials. The Merdeka Curriculum makes it possible to improve the quality of mathematics learning compared to the 2013

Curriculum. However, to achieve this potential, continuous efforts are needed from various parties, such as teachers, schools, parents, and the government.

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