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SYSTEMATIC LITERATURE REVIEW: SUPPORTING FACTORS FOR IMPLEMENTATION OF THE MINIMUM COMPETENCY ASSESSMENT AT SCHOOL

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ABSTRACT

This study aims to obtain information about the factors supporting the application of AKM in schools and the potential for the application of AKM in mathematics learning with the help of other models or methods as an effort to improve students' higher-order thinking skills. The research method chosen in this study is the SLR (Systematic Literature Review) method. Data is collected by documenting and reviewing all articles related to AKM with the help of the Publish or Perish application. Twelve accredited national journal articles for 2015-2022 were chosen to be analyzed. This research found that the AKM supporting factors consist of four aspects, namely (1) stakeholders, (2) implementation method, (3) material or content, and (4) facilities, and infrastructure. Then the application of other models or methods in mathematics learning has the potential to be an effort to increase skills. Student higher order thinking skills.

Penelitian ini bertujuan untuk memperoleh informasi mengenai faktor-faktor pendukung penerapan AKM di sekolah dan potensi penerapan AKM pada pembelajaran matematika dengan bantuan model atau metode lain sebagai upaya peningkatan kemampuan berpikir tingkat tinggi siswa. Metode penelitian yang dipilih dalam penelitian ini adalah metode SLR (Systematic Literature Review). Pengumpulan data dilakukan dengan mendokumentasi dan mereview semua artikel terkait AKM dengan bantuan aplikasi Publish atau Perish. Sebanyak 12 artikel dari jurnal nasional terakreditasi dengan kurun waktu 2015-2022 dipilih untuk dianalisis. Penelitian ini menemukan bahwa faktor pendukung AKM terdiri dari empat aspek, yaitu (1) stakeholder, (2) metode pelaksanaan, (3) materi atau konten, dan (4) sarana dan Prasarana. Kemudian penerapan model atau metode lain dalam pembelajaran matematika berpotensi sebagai upaya peningkatan kemampuan berpikir tingkat tinggi siswa.

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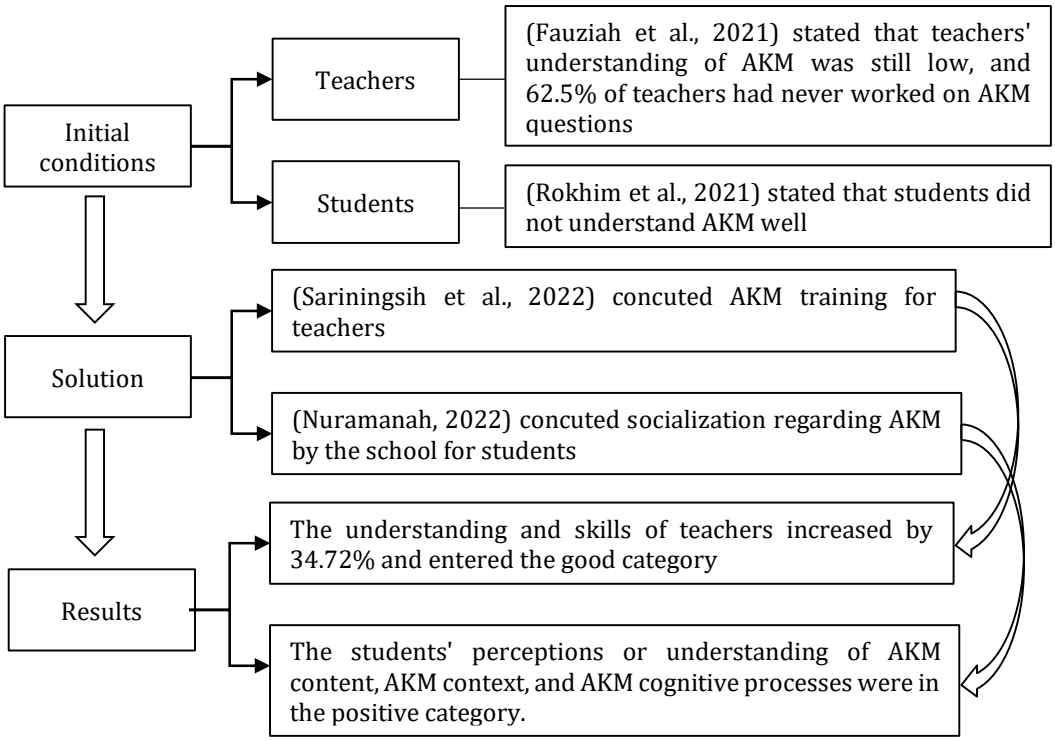
1. INTRODUCTION

The purpose of national education was stated in Article 3 of Law Number 20 of 2003 concerning the National Education System, which includes intellectual, spiritual, and emotional aspects (courtesy and behavior). Measuring the success of education and learning requires the correct type of evaluation so that the success of education can be measured and mapped clearly. Because to measure the success of educational goals, not all types of evaluation can be used (Rohim, 2021). Planning, implementation, and evaluation activities are a series of activities that must be considered and implemented in the education process in a country. According to (Adom, 2020; Fauziah et al., 2021), evaluation is an activity to measure or observe a process to assess and determine its value by comparing it with this or with a predetermined standard of measure.

In evaluation education in Indonesia before 2021, the National Examination (UN) was used as an evaluation tool to measure student knowledge individually on a national scale. Moreover, the UN also acts as a source of information to map and evaluate the quality of the education process in Indonesia. However, in 2020 when there was an emergency, namely the COVID-19 pandemic, which caused the UN to be canceled due to various considerations. Then a change was made, replacing the UN with a National Assessment (AN). This is by the Regulation of the Minister of Education, Culture, Research and Technology (Mendikbud Ristek) Number 17 of 2021 concerning National Assessments (AN). AN consists of Minimum Competency Assessment (AKM), a character survey, and a learning environment survey (Nanda Novita 2021).

Assessment is an activity to reveal the quality of the learning process and results (Resti and Krenaswati, 2020; Rohim, 2021). Then, the assessment was different from evaluations such as the National Examination because the National Examination was only oriented to the cognitive abilities of each subject related to grades. In comparison, the AKM measures the minimum competencies that students must possess to develop their capacity and participate positively in society (Hartati, 2017; Yusuf, 2017; Sani, 2021; Meriana & Murniarti, 2022), not only mastery of content. So that the results of the AN are designed to encourage the implementation of innovative, meaningful learning and focus on developing students' reasoning abilities, not rote memorization. In line with this, (Coates, 1994; Purnomo et al., 2022) stated that the Minimum Competency Assessment (MCA) seeks to determine the minimum level acceptable for educational attainment. In addition, according to (Grise, 1982) AKM or Minimum Competency Assessment (MCA) is the best way to serve the needs of students.



Picture 1. Preparation of Educational Institutions for AKM in Terms of Teachers and Students

Picture 1 shows that starting in 2021, formal and non-formal educational institutions from basic to senior secondary education levels will prepare themselves in terms of teacher knowledge and skills, facilities, and infrastructure, as well as learning activities that support AKM activities. Based on research, Fauziah et al. (2021) concluded that teachers' understanding of the AKM is still low, and 62.5% of teachers answered that they had never tried to work on the AKM questions. Not only do teachers know the readiness of students at the beginning of the implementation of AKM activities based on research (Rokhim et al., 2021) still does not understand AKM well. However, after training, as in the research (Sariningsih et al., 2022), it was found that the understanding and skills of teachers increased by 34.72% and entered the excellent category. Then students' understanding after the socialization of AKM from the school and teachers as in research (Nuramanah, 2022) concluded that students' perceptions or understanding of AKM content, AKM context, and AKM cognitive processes were in a positive category. The studies above show that there is a development towards a positive direction from the implementation of AKM in schools from the timeframe of 2021-2022.

Based on this background, researchers are interested in conducting a literature review of the development of AKM implementation, which aims to obtain information on what factors support and influence the process of implementing AKM policies in schools and the potential for implementing AKM in learning with the help of models or other methods as an effort to improve students' higher order thinking skills.

2. METHOD

The method used in this research is a Systematic Literature Review (SLR) which is carried out by identifying, reviewing, evaluating, and interpreting all available research with specific relevant research questions.

2.1 Research Subject

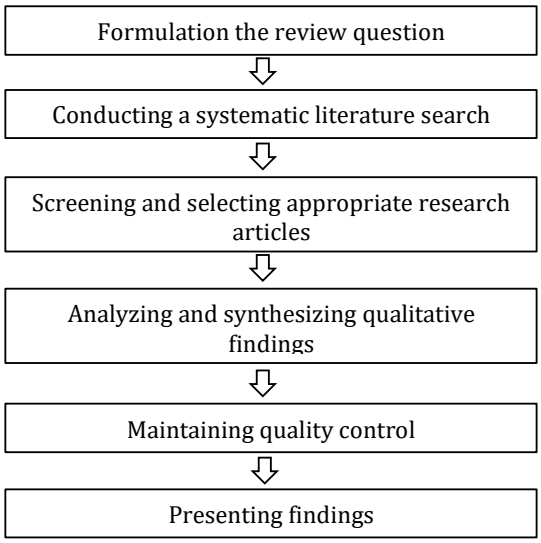
The population in this study were all studies on the Minimum Competency Assessment (AKM). Researchers collect journal articles on the Google Scholar database using the Publish or Perish application. The keyword used is "Minimum Competency Assessment (AKM)." From this search, 149 articles were published in the 2017-2022 timeframe. The technique used in sampling is purposive sampling. The sample obtained is 12 articles related to the keywords used and have met the predetermined inclusion criteria, namely: (1) focusing on the preparation and implementation of AKM in schools; (2) focusing on applying AKM with other models or methods in learning mathematics; (3) the selected studies have been published within the last five years; (4) articles come from SINTA 1-5 indexed journals.

2.2 Data Collecting

In this study, primary data was not used because researchers did not look for the first data but data that previous researchers had made. Data collection in the research was obtained from several stages, including (1) literature study, conducting data assessment studies in journals related to AKM obtained from Google Scholar; (2) documentation, the data obtained will be stored in the data folder.

2.3 Data Analysis

The data analysis technique in this Systematic Literature Review (SLR) qualitative research uses meta-synthesis. Meta-synthesis integrates data to obtain new theories or concepts or a deeper and more comprehensive understanding (Siswanto, 2010). The steps in this study are shown in Figure 2 based on (Fracis & Baldesari, 2006)



Picture 2. The Research Steps Systematic Literature Review

The research questions in this study are: (1) what is the process of preparing and implementing AKM in educational institutions; (2) whether the application of AKM in learning mathematics can be made with the help of other models or methods. After searching and selecting articles, the researcher grouped articles about AKM, both related to the factors that influence the application of AKM and the potential for applying AKM to learning with other models or methods for and improving students' mathematical abilities after applying AKM. The articles' metadata is tabulated in a table that includes the author's name, title, Year of publication, journal name, type of research, and research results. After that, the researcher reviewed and analyzed in depth the research results of the articles. Then, researchers compare the findings or results contained in the articles and provide conclusions (Sartika & Octafiani, 2019; Putra & Afrilia, 2020).

3. FINDINGS AND DISCUSSION

3.1. Findings

The AKM questions present problems with various content, cognitive processes, and contexts for literacy and numeracy abilities. Literacy skills consist of informational and literary texts with the expected cognitive processes, namely finding, interpreting, integrating, evaluating, and reflecting on the information. In comparison, the components of numeracy skills consist of algebra, numbers, geometry, measurements, data, and uncertainty with numeric content, namely home, work environment, community life, and as citizens, as well as further learning (Ginsburg et al., 2006). The cognitive processes expected to be experienced by students are understanding, application, and reasoning. Based on these components, in implementing the AKM policy, the stakeholders involved must have good literacy and numeracy knowledge and skills to enable students in the implementation of AKM.

The research data contained in this article is an analysis of documented articles related to the implementation of AKM in schools.

Table 1. Research on the Development of AKM Implementation

Researcher and Year	Journal and Title	Research Types and Results
(Yuliandari & Hadi, 2020)	Jurnal Kependidikan Islam Berbasis Sains, "*Implikasi Asesmen Kompetensi Minimum dan Survei Karakter Terhadap Pengelolaan Pembelajaran SD"*	This research uses qualitative research with a literature study method. The conclusion is that improvements in supporting learning governance, teacher professionalism, and the active role of school principals influence the process of implementing AKM in schools.
(Resti et al., 2020)	Seminar Nasional AVoER XII 2020, *"Peningkatan Kemampuan Numerasi Melalui Pelatihan dalam Bentuk Tes untuk Asesmen Kompetensi Minimum Bagi Guru*	This study uses quantitative research with the conclusion that training to improve the teacher's ability to make assessments and measurements to assess students' numeracy skills gets good results.

	SDIT Auladi Sebrang Ulu II Palembang"	
(Fauziah et al., 2021)	Edukatif: Jurnal Ilmu Pendidikan, *"Analisis Pemahaman Guru Sekolah Menengah Pertama (SMP) mengenai Asesmen Kompetensi Minimum (AKM)"*	This study uses descriptive quantitative research with the conclusion that teachers' understanding of AKM is still low, so teachers are hampered in implementing and providing examples of AKM-type questions in learning.
(Nurhikmah et al., 2021)	CJPE: Cokroaminoto Journal of Primary Education, *"Persepsi dan Kesiapan Guru dalam Menghadapi Asesmen Kompetensi Minimum"*	This study uses a qualitative descriptive method with conclusions in the implementation of AKM teacher perceptions and readiness seen from the completeness of learning teacher tools, HOTS questions, and modules for teachers and students are pretty good because teachers have attended AKM workshop activities.
(Patriana et al., 2021)	Jurnal BASICEDU, *"Pembudayaan Literasi Numerasi untuk Asesmen Kompetensi Minimum dalam Kegiatan Kurikuler pada Sekolah Dasar Muhammadiyah"*	This research uses a qualitative method with a phenomenological approach with the conclusion that the cultivation of numeracy literacy for AKM consists of planning by preparing lesson plans, literacy and numeracy-oriented teaching materials, HOTS evaluation questions, and designing learning media. Then the implementation is synchronous through Zoom meetings and asynchronous through YouTube, self-assignment, and WhatsApp. The evaluation stage involves observing virtual classes and teacher reflections and analyzing student learning outcomes and effectiveness.
(Putri et al., 2022)	Prosding Konferensi Ilmiah Dasar, *"Implementasi Asesmen Kompetensi Minimum (AKM) pada siswa kelas V Sekolah Dasar"*	This study uses a descriptive qualitative method with the conclusion that AKM planning in schools that are the subject of research from ICT infrastructure is ready, the support and role of good principals, and the availability of AKM supporting books for teachers and students. The results of the school's AKM for the literacy category have reached the minimum competence. Only numeracy has not reached the minimum limit.
(Khasanah et al., 2022)	Seminar Nasional Hasil Pelaksanaan Program Pengenalan Lapangan Persekolahan, *"Analisis Persepsi Siswa terhadap Pelatihan Dasar Laptop dan Latihan Soal Literasi Numerasi Guna Menghadapi Pelaksanaan Asesmen Kompetensi Minimum Kelas 5 SD Negeri 6 Jimbung"*	This study uses quantitative description with the conclusion that students positively perceive basic laptop training and exercises on literacy and numeracy.

(Iman et al., 2021)	Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan, *"Implementasi Kebijakan Sekolah Dasar dalam Menghadapi Asesmen Kompetensi Minimum"*	This study uses a qualitative method with a descriptive approach. The conclusion is that the supporting factors for the implementation of AKM are the support and proactive attitude of the principal and the availability of AKM supporting books for teachers and students.
(Nuzulia & Gafur, 2022)	Madrosatuna: Journal of Islamic Elementary School, *"Pengembangan Buku Latihan Berbasis Asesmen Kompetensi Minimum (AKM) untuk Meningkatkan Kemampuan Literasi Dan Numerasi Siswa Di SDN Janti 02 Sidoarjo"*	This study uses the R&D method with the Borg and Gall model. The conclusion obtained is that the development of the AKM exercise book has proven to be able to improve the literacy and numeracy skills of elementary school (SD) students.

Based on the results of the research carried out as listed in Table 1, at the beginning of the application of AKM, teachers' understanding of the AKM was still low, and they provided examples of questions similar to or equivalent to AKM in learning (Fauziah et al., 2021), this led to the delay in the AKM implementation process in schools. In (Resti et al., 2020) also mention that the numeracy skills of teachers in making assessments and measurements of student numeracy are still low when they have not carried out training. However, research (Nurhikmah et al., 2021) states that teachers' readiness in terms of knowledge and skills is good, with positive perceptions after participating in the AKM workshop activities. This is evidenced by the completeness of teacher learning tools, HOTS questions, and teacher and student modules regarding AKM. Not only the knowledge and skills of teachers, (Khasanah et al., 2022) mention that students' positive perceptions of AKM by carrying out basic training on using laptops to support AKM and practicing questions equivalent to AKM also greatly affect the implementation of AKM in schools.

The process of implementing AKM was carried out well in research (Yuliandari & Hadi, 2020) because of school policy planning and learning governance, teacher professionalism, and the active role of school principals. In addition, the cultivation of numeracy literacy in curricular activities (Patriana et al., 2021) consists of a well-managed process of digestion, implementation, and evaluation as a result of good cooperation between school principals, teachers, and students to cultivate numeracy literacy. (Putri et al., 2022) stated that schools are in good condition implementing AKM because Information and Communication Technology (ICT) infrastructure is ready, and the school principal's support and AKM support books for teachers and students are evidenced by the results of the school's AKM in the literacy category. They have reached the minimum competence. The principal's proactive attitude is also mentioned by (Iman et al., 2021), and the availability of AKM supporting books for teachers and students correctly supports the implementation of AKM in schools. Many books that support AKM have been developed, one of which is by (Nuzulia & Gafur, 2022), which is proven to improve students' literacy and numeracy skills. To maximize the application of AKM, learning must be designed to support students literacy and numeracy skills. For this reason, specific

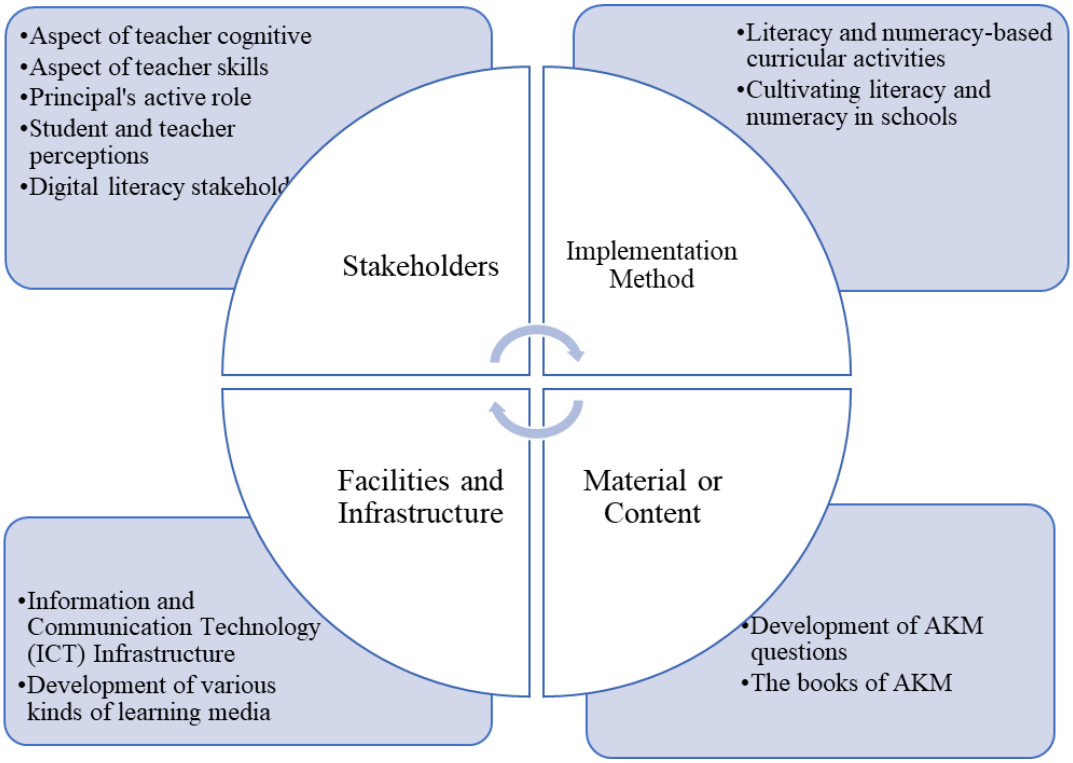
models, methods, approaches, or learning strategies can be used in learning mathematics, as shown in Table 2.

Table 2. Research on the application of specific learning models or methods in Mathematics Learning to improve the application of AKM

Researcher and Year	Journal and Title	Research Types and Results
(Diva et al., 2022)	Seminar Nasional Pendidikan Matematika, Universitas Muara Kudus, *"Pengaplikasian PMRI Dengan Soal HOTS Guna Meningkatkan Kompetensi Literasi Numerasi dalam Asesmen Kompetensi Minimum"*	This study uses a literature study with the results that applying PMRI in solving HOTS questions can improve students' literacy and numeracy competencies for AKM.
(Ahmad, 2022)	Jurnal Kajian Pendidikan Dasar (JKPD), *"Efektivitas Conceptual Understanding Procedures Menggunakan Live Workhseets Terhadap Asesmen Kompetensi Minimum (Akm) Di Sekolah Dasar"*	This study uses an actual experimental design with learning outcomes using CUPs assisted by live worksheets that are more effective for improving AKM than expository learning.
(Kartina et al., 2022)	Wahana Didaktika, *"Peningkatan Kemampuan Asesmen Kompetensi Minimum (AKM) Literasi Siswa melalui Pendekatan Saintifik SMP Negeri 2 Payaraman"*	This research uses Classroom Action Research (CAR) with the result that there is an increase in students' AKM abilities through scientific learning and increased student activity during learning. This can be seen from the learning outcomes.

Based on the results of the study in Table 2, it is revealed that other models, methods, approaches, or learning strategies can be combined with literacy and numeracy in AKM (based on AKM) to improve the implementation of AKM in schools. Applying PMRI with HOTS questions (Diva et al., 2022) has improved literacy and numeracy competencies for AKM. (Ahmad, 2022) using the Conceptual Understanding Procedures learning strategy with the help of Live Worksheets designed to increase AKM compared to expository learning proven to be more effective CUPs. In addition to CUPs, the proven learning model (Kartina et al., 2022) is scientific learning that has been proven to improve AKM abilities and student activities during learning seen from student learning outcomes after learning.

3.2. Discussion



Picture 3. Supporting Factors for the Implementation of AKM

Picture 3 shows that the supporting factors for the implementation of AKM consist of stakeholders, implementation methods, materials, or content, as well as facilities and infrastructure. The most influential supporting factor is the stakeholder. Without resources, educational goals cannot be achieved (Nurcahyono & Novarina, 2016). Stakeholders who play a direct role in implementing AKM are teachers, students, school principals, and the government. The perception of all stakeholders who play a role in AKM must be positive so that motivation and interest will arise to work together to implement AKM. For teachers, the cognitive and skill aspects that need to be considered consist of understanding and skills regarding AKM, content in AKM, HOTS questions, developing AKM equivalent questions, and developing learning evaluations that are very much needed and must be in a suitable category. To improve this knowledge and skills, teachers can be given training or workshops on AKM. In line with this (Wood & Ashfield, 2008; Yuliandari & Hadi, 2020), the skills and knowledge of teachers who can mediate interactions and facilitate the development of students' creative responses using ICT can improve learning in the classroom. This shows that the digital literacy of teachers and students is also very important for the implementation of AKM. Students perceive technology positively because elementary to high school students today are part of Generation Z and Alpha, who have great potential to use, utilize, and innovate with technology. Generation Z is known to be able to take advantage of technological changes in various aspects of life (Jenks, 2017; Deswita & Zamista, 2021), and the Alpha generation who were born in the digital era. Then,

principals who act as leaders in school education must have good knowledge, attitudes, and skills to regulate and decide all policies that will be implemented in schools.

Stakeholders play a role in planning, implementing, and evaluating all implementation methods that support the implementation of AKM in schools. The following supporting factor is the implementation method. Based on the results of analyzing the articles in table 1, two methods of implementing the AKM implementation can be found: curricular activities and school culture (positive habituation). Based on (Patriana et al., 2021)concluded that literacy and numeracy-based learning will support the improvement of AKM implementation. The implementation of AKM-based learning activities must be carried out in detail, starting from the planning, implementation, and evaluation (follow-up) stages. Then the environment that cultivates literacy and numeracy will affect students' abilities (Sagers et al., 2015). In line with this, the implementation method is based on the theory of constructivism, according to Vygotsky. Vygotsky put forward the idea that students' intellectual development can be understood only in the cultural and historical context of students' experiences (Vander Veer & Valsiner in Slavin, 2000). So that AKM-based learning enters into constructivist learning.

In implementing the chosen method, stakeholders need materials or content and adequate facilities and infrastructure. Based on the results of the studies in table 1, the development was carried out on items, assessment of learning outcomes, and teaching materials supporting AKM for teachers and students. AKM aims to develop literacy and numeracy skills and strengthen character education (Ismail, 2021). Because with minimum abilities and cognitive processes that occur in the process of working and learning based on AKM, students are expected to be able to participate positively in the community. The facilities and infrastructure, including ICT infrastructure in schools and learning media, are also supporting factors. The AKM implementation process uses two systems: semi-online with a local server and a computer, 1 Mbps bandwidth, or online with a computer, 12 Mbps bandwidth for 15 computers (Mendikbud, 2020). If school infrastructure does not meet these specifications, the implementation of AKM will be hampered. Then in the AKM-based learning process, teachers can use or develop learning media in the form of visual, audiovisual, or conventional to support the material AKM-based learning.

In implementing learning, especially mathematics learning, you can combine the AKM concept with other methods, models, approaches, or strategies. This is done to improve the ability of AKM (literacy and numeracy) or the application of AKM. Based on table 2, previous researchers have used PMRI with HOTS questions, scientific learning, and learning strategies for Conceptual Understanding Procedures with the help of Live Worksheets. The three studies showed positive results in increasing the MMR. Testing and improving students' numeracy and literacy skills in working on AKM also mean increasing their higher-order thinking skills so that the application of AKM, which improves students ' numeracy and literacy skills, has the potential to develop higher-order thinking skills. Because according to (Anderson & Krathwal, 2015; Nauvalika Permana et al., 2020), measuring higher-order thinking skills involves several indicators, namely analyzing, evaluating, and creating. These three indicators are the expected cognitive processes when solving AKM questions. Higher-order thinking skills include critical thinking, creative

thinking, and problem-solving (Pratiwi, 2019). Critical thinking can be developed through mathematical reflective thinking skills because these abilities are the basis for obtaining critical thinking skills (Nismawati et al., 2019).In addition, creative thinking can be developed through students' mathematical imagination abilities because imagination is the basis of all creative activities (Vygotsky, 2004; Nurcahyono et al., 2020).

4. CONCLUSION

Based on the results of the analysis of 12 articles related to the appropriate AKM, it was concluded that the success of students in answering AKM questions begins with the role of stakeholders in implementing and facilitating literacy and numeracy-based learning, the implementation methods used for the implementation of AKM, as well as materials or content and adequate infrastructure. From this process, the supporting factors for the successful implementation of AKM consist of four aspects, namely: stakeholders, implementation methods, materials or content, and infrastructure. The most significant factor supporting the implementation of AKM is the method of implementation, namely the cultivation of school literacy-numeration and AKM-based learning. According to Vygotsky, the intellectual development of students can only be understood in the cultural context and student experience. In addition, the application of AKM in the learning process is combined with other methods, models, approaches, or strategies. As well as involving students in playing an active role, carrying out the reasoning process in solving AKM questions, and having sufficient numeracy and literacy skills can potentially also improve other higher-order thinking skills, such as critical thinking skills, creative thinking and problem-solving.

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