THE LITERACY AND NUMERACY ABILITY PROFILE WHICH ARE VIEWED FROM MINIMUM ASSESSMENT COMPONENTS (AKM)

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ABSTRACT

Literacy and numeracy skills are cognitive learning outcomes measured in the Minimum Competency Assessment (AKM) and are part of the National Assessment (AN). This study aims to describe the literacy and numeracy achievement profile of junior high school students in terms of three aspects, namely content, cognitive processes, and context The descriptive quantitative approach method used in this research involved 141 class VIII junior high school students in North Aceh Regency and Lhokseumawe City through random sampling. Respondents are participants who took part in the 2021 National Assessment. The research instrument used was a question on literacy with 26 questions and numeracy with as many as 30 questions according to the grid and aspects of the AN that had been validated. The context of the questions is arranged in the form of personal, socio-cultural, and scientific. The distribution of the questions is in the form of 20% multiple-choice, 60% complex multiple-choice, 10% matching, 5% short answer or short answer, and 5% description. The results showed the average percentage score of literacy ability was 43.87% with low criteria, meanwhile for numeracy skills, the average percentage score was 33.91% with very low criteria. These results indicate that students' literacy and numeracy skills in terms of each content need to be improved through the implementation of learning programs and the use of textbooks that lead to the improvement and development of literacy and numeracy skills..

Keywords: literacy, numeracy, Minimum Competency Assessment

INTRODUCTION

The educational process is an ongoing endeavor encompassing various elements, including primary inputs such as students, instrumental inputs like educators, objectives, educational materials/programs/curriculum, teaching methods, facilities, and infrastructure, as well as environmental inputs which encompass the situation and conditions within the educational environment, encompassing social, cultural, economic, and security aspects

(Maamarah & Supramono, 2016; Yusuf, 2017). Assessment constitutes a pivotal step in gauging students' learning outcomes. Educators employ assessments to monitor and appraise the learning processes, the progression of learning, and the continual enhancement of students' learning outcomes. These assessments also serve as a foundation for government policies in the realm of education (Mustopa et al., 2021; Rokhim et al., 2021). The outcomes of assessments may manifest in both qualitative and quantitative forms. The evaluation model for education in Indonesia has experienced several revisions, with the most recent occurring in 2020, when the National Examination (UN), designed to evaluate students nationally at the conclusion of their primary and secondary education, had to be discontinued due to the pandemic (Yossihara, 2020). The government subsequently introduced the National Assessment (AN) as the latest evaluation mechanism for the national education system.

The National Assessment (AN) comprises three key components: the Minimum Competency Assessment (AKM), a character survey, and a learning environment survey (Herizal et al., 2020). The AKM system draws inspiration from the Program for International Student Assessment (PISA) and Trends in Mathematics and Science Studies (TIMSS) standards, serving as a benchmark for evaluation (Sherly et al., 2021). The AKM segment primarily aims to assess students' cognitive learning outcomes, focusing on essential and enduring content such as literacy and numeracy across various classes and levels (Mellyzar et al., 2022; Novita et al., 2021). Literacy, within this context, encompasses an individual's language proficiency in listening, speaking, reading, and writing, enabling effective communication in diverse situations according to their objectives (Buwono & Dewantara, 2020; Novita et al., 2023). Literacy-based learning at the secondary school level assumes great importance as it engages students with texts that foster creativity, critical thinking, and active communication skills (Abidin et al., 2021; Mellyzar et al., 2022). These literacy activities can occur both inside and outside the classroom, with the overarching goal of enhancing information skills, including information gathering, processing, and communication. Developing the ability to explore and locate information is a crucial skill for students to master (Muliani et al., 2021; Syamsi et al., 2013).

Literacy refers to an individual's capacity to effectively manage and comprehend information during the reading process. Within the AKM framework, literacy encompasses three essential components: content, cognitive processes, and context. Content comprises both informational texts and literature, while cognitive processes encompass tasks such as locating information (retrieval and access), interpreting and integrating information, as well as evaluating and reflecting upon it. The contextual aspects encompass personal, socio-cultural,

and scientific elements. Literacy is evaluated based on students' ability to use written texts for socially relevant and practical purposes, thereby facilitating the development of their knowledge and potential (Harsiati, 2018; Mellyzar, et al., 2022).

Numerical literacy, on the other hand, pertains to an individual's capacity to employ reasoning effectively in mathematical contexts. The primary focus of numeracy skills is to enable students to formulate, apply, and interpret mathematics within various contexts. This includes employing mathematical reasoning and utilizing mathematical concepts, procedures, facts, and tools to describe, explain, and predict phenomena in everyday life (Ate & Lede, 2022; Darwanto & Putri, 2021; Puspaningtyas & Ulfa, 2020; Zainiyah, 2019). Numerical literacy comprises the knowledge and skills necessary to (1) utilize various numbers and symbols related to basic mathematics to solve practical problems in various everyday life contexts and (2) analyze information presented in diverse forms (e.g., graphs, tables, charts) and then utilize the interpretation of the analysis results to make predictions and informed decisions (Kemdikbud, 2017; Novita et al., 2022; Nuryana et al., 2020). Within the AKM framework, the components of numerical literacy encompass number content, measurement and geometry, data and uncertainty, and algebra. Cognitive processes in this domain revolve around comprehension, application, and reasoning. The contextual components encompass personal, social, cultural, and scientific elements, shaping the development and application of numerical literacy skills. The public education report card resulting from the 2021 National Assessment (AN) can be accessed through the report page at *raporpendidikan.kemdikbud.go.id/*. This report provides an overview of the quality of education within a particular area, based on an assessment framework that has been developed from the model's inputs, processes, and outputs regarding the performance and effectiveness of educational units.

The results of the 2021 AN for Junior High School (SMP) level, which have been compiled into a report card, indicate that, in general, literacy and numeracy skills are still below the minimum standards. This trend is consistent with what is observed in Aceh Province, where the literacy and numeracy abilities of students fall short of the minimum competency, with less than 50% of students having mastered the competency threshold. At the district level, North Aceh and the City of Lhokseumawe also show similar results, with literacy and numeracy abilities below the minimum competence level. This situation aligns with previous research that has highlighted the relatively low literacy and numeracy abilities of Indonesian students, which, in turn, have a negative impact on their critical thinking skills (Anisa et al., 2021; Sihaloho et al., 2019).

The cause of low literacy achievements is the use of inappropriate reading materials in the learning process, as well as the lack of adoption of literacy-based evaluation models in the education system, as mentioned in previous research (Karnasih, 2015; Laksono & Retnaningdyah, 2018; Pangesti, 2018). Based on the explanation above, researchers feel it is necessary to conduct further studies on the performance of each literacy and numeracy component, including content, cognitive processes, and context, in order to better understand and improve students' literacy and numeracy abilities.

METHODS

The study employs a quantitative descriptive research methodology with the objective of offering a thorough overview of the literacy and numeracy achievement patterns among junior high school students. This examination encompasses three primary dimensions: content, cognitive processes, and context. The research was conducted at several schools, namely SMPN 1 Dewantara, SMPN 2 Dewantara, SMPS Iskandar Muda in North Aceh Regency, and SMPN Arun in Lhokseumawe City. The study involved a total of 141 class VIII students who had participated in the 2021 National Assessment (AN). The research instrument employed in this study consisted of a set of questions designed to assess literacy, comprising 26 questions (information text and literature text), and numeracy, comprising 30 questions (number, measure and geometry, data and uncertainly, algebra). These questions were aligned with the AN's grid and aspects and had been previously validated. The questions were structured to address personal, socio-cultural, and scientific contexts. The distribution of question types included 20% multiple-choice, 60% complex multiple-choice, 10% matching, 5% short answer or brief response, and 5% descriptive questions (Mulyadi et al., 2021). To determine literacy and numeracy scores for each aspect, the study employed the average percentage technique. Subsequently, the results were interpreted using a predefined set of criteria, which were likely used to categorize and assess students' performance based on the obtained scores.

Table 1. Interpretation Criteria Score

Interval Percentage	Criteria
$86 < N \leq 100$	Very Good
$72 < N \leq 86$	Good
$58 < N \leq 72$	Enough
$43 < N \leq 58$	Low
$N \leq 43$	Very Low

(Djaali & Mulyono, 2008)

RESULTS AND DISCUSSION

Instruments for Literacy and Numerical Literacy Question

The prepared instruments were validated by material experts, namely three lecturers, and were declared valid. The suggestions from the validators can be seen in Table 2.

Table 2. Suggestions from the Material Expert Validator

No.	Suggestions
1.	Writing equations or using symbols in questions should be clarified and adapted to write correct equations
2.	In making questions, it is better to use words that are easy to understand and rational
3.	Presentation of graphics or images should be made more attractive

Examples of numeracy questions, measurement content, and geometry with process cognitive reasoning.

Toko ikan Ria memajang salah satu koleksi ikan pada aquarium berukuran 40 cm x 30 cm x 30 cm. Minggu ini merupakan jadwal sang pemilik untuk mengganti air pada aquarium tersebut. Saat akan mengganti air pada aquarium, air yang sebelumnya ada tidak boleh di buang seluruhnya melainkan harus disisakan $\frac{1}{4}$ dari volume total. Ketika mengisi air yang baru pun, aquarium pu tidak diperbolehkan diisi penuh tetapi maksimal adalah $\frac{4}{5}$ dari volume total. Berikut beberapa pernyataan terkait keterangan di atas, berilah tanda (✓) pada kolom yang benar atau salah untuk setiap pernyataan

No	Pernyataan	Benar	Salah
1	Kapasitas maksimal aquarium adalah 36 L		
2	Air yang harus ada di dalam aquarium yaitu sebanyak 36 L		
3	Air yang harus di sisakan saat akan mengganti air pada aquarium yaitu sebanyak 9 L		
4	Air baru yang perlu ditambahkan ke dalam aquarium yaitu sebanyak 27 L		

Example of literacy questions reading information text content with cognitive processes of finding information.

Perhatikan ilustrasi poster berikut ini untuk menjawab soal nomor 20 & 21.	**Soal 20** Apa isi informasi di samping? Cara mencuci tangan dengan benar Tips agar terhindar dari penyakit Tata cara yang tepat pemakaian masker Cara memilih jenis masker **Soal 21** Tentukan apakah pernyataan berikut benar atau salah mengenai tata cara memakai masker berdasarkan informasi di atas!

No.	Pernyataan	Benar	Salah
1.	Jika Anda tidak sakit, tidak perlu memakai masker.		
2.	Masker yang dipakai harus menutupi hidung, mulut, dan dagu.		
3.	Lepas masker dengan cara menarik pada bagian mulut.		
4.	Ganti masker apabila kotor atau basah.		

Perhatikan teks informasi berikut ini untuk menjawab soal nomor 15-17!

Mencuci Tangan

Menurut para ahli, cara efektif mencegah penyebaran penyakit menular adalah dengan rajin mencuci tangan. Selain itu, berdasarkan riset juga membuktikan bahwa orang yang rutin mencuci tangan dan kebersihan diri, berisiko 20% lebih kecil untuk jatuh sakit. Untuk itu, kita disarankan untuk mencuci tangan minimal 20 detik menggunakan air dan sabun.

Mencuci tangan tidak dilakukan secara terburu-buru karena dapat menyebabkan kontaminasi silang dan meningkatkan resiko penularan. Supaya benar-benar terlindung dari virus dan bakteri, ada beberapa tahapan yang harus dilakukan. Tahapan dimulai dengan membasahi tangan. Lalu oleskan sabun pada tangan dan ratakan ke seluruh bagian tangan. Jangan lupa bersihkan kuku dan sela-sela jari karena termasuk bagian yang agak sulit dijangkau dan tersembunyi sehingga kuman dan bakteri bisa bersarang di keduanya. Gosok tangan minimal 20 detik, lalu bilas sampai bersih. Setelah itu, keringkan tangan dengan handuk bersih.

(Dikutip dari https://health.kompas.com)

Soal 15: Berikut anjuran mencuci tangan sesuai dengan isi teks diatas , kecuali …

A. Memcuci tangan menggunakan air dan sabun
B. Membasuh ujung kuku dan sela-sela jari
C. Mencuci tangan minimal selama 20 detik
D. Memcuci tangan secara terburu-buru

Soal 16: Mengapa kita harus membersihkan ujung kuku dan sela-sela jari? Berikan jawabanmu dengan memberikan tanda centang (✓) di samping pernyataan yang benar!

Ujung kuku dan sela-sela jari merupakan tempat bersarang kuman	
Ujung kuku dan sela-sela jari banyak terdapat kuman dan bakteri secara tersembunyi.	
Ujung kuku dan sela-sela jari merupakan bagian tangan yang sulit dijangkau	
Ujung kuku dan sela-sela jari merupakan bagian yang sering terlewat saat mencuci tangan	

Soal 17: Berapa lama setidaknya kita mencuci tangan menggunakan air dan sabun?

Ability literacy skills of students in four junior high schools in North Aceh Regency and Lhokseumawe City are in the low category with an average percentage of 43.87%. About literacy skills with socio-cultural and scientific contexts. Socio-Cultural, related to inter-individual interests, cultural and social issues as well as scientific, related to issues, activities, and scientific facts, both those that have been carried out and futuristic. The content is in the form of informational texts and literary texts. Information text is a text that aims to provide facts, data, and information in the context of developing scientific insight and knowledge (Asrijanty, 2020). Literary texts are texts that are composed with artistic purposes using language (Taum, 2017). Details of the percentage of each content and students' cognitive abilities are shown in Figure 1.
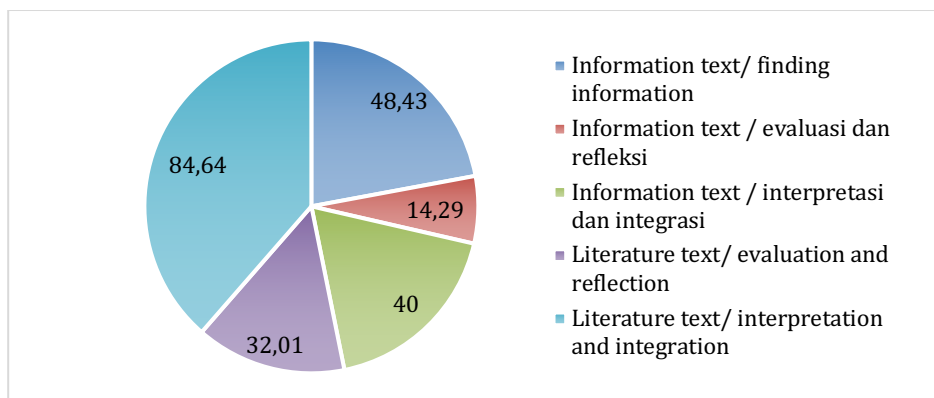

Figure 1. Percentage of Literacy Ability Based on Content and Cognitive Knowledge.

From the results of the study, it was found that the content of informational texts and literary texts on cognitive ability evaluation and reflection with the lowest percentage was 14.29% for informational text content and 32.01% for literary texts. To answer this question students must focus on the content and presentation of the text, not just understanding its meaning. This result is in line with research (Liestari & and Muhardis, 2020) which states that only 20.91% of students can answer questions designed to measure the ability to reflect and evaluate the content of the text. The percentage of informational text content with cognitive ability to find information as well as interpretation and integration is 48.43% (low) and 40% (very low). The highest percentage is 84.64% (good) in literary text content with cognitive interpretation and integration abilities.

Overall, students' literacy skills are still low, especially at the cognitive level of evaluation and reflection both on literary text content and information text content. Students have not been able to use knowledge, ideas, or attitudes outside the text to make judgments and

reflections related to the text. This stage is the highest stage of the reading process, where students are expected to be able to analyze, predict, and assess context, and elements in the language. In addition, students are also expected to be able to reflect or create an image or opinion on reading that is related to their own experiences and life around them (Kemendikbud, 2020). The level of students' competence in literacy needs special intervention because students have not been able to find and retrieve explicit information in the text or make simple interpretations.

Students' numeracy ability is lower than literacy ability with an average of 33.91%. The cognitive process of numeracy includes understanding, understanding facts, procedures, and mathematical tools. Application, able to apply mathematical concepts in real situations that are routine. Reasoning, reasoning with mathematical concepts to solve non-routine problems (Asrijanty, 2020). Numerical content consists of numbers, measurements, geometry, data and uncertainty, and algebra. The percentage details are in Figure 2.
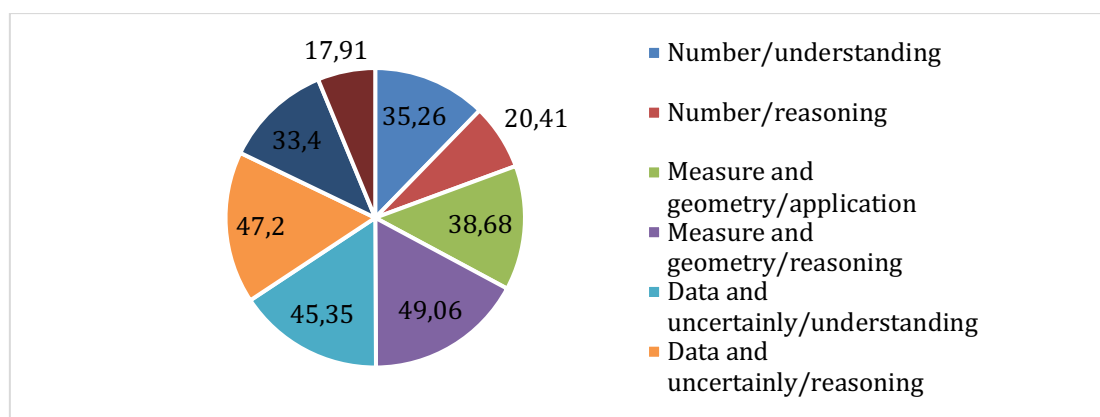

Figure 2. Percentage of Numerical Ability Based on Content and Cognitive Knowledge

The percentage of algebraic content is in the very low category. The cognitive context of reasoning has the smallest percentage of 17.91%. This shows that students do not understand equations and inequalities, relations and functions (including number patterns), and social arithmetic problems related to ratios or percentages. The percentage of algebra in the cognitive context of the application is 33.40%, meaning that students have not been able to apply mathematical concepts in real situations that are routine. The percentage of algebraic content in the realm of reasoning is 33.78%, indicating that students' abilities are very low in reasoning with mathematical concepts to solve non-routine problems. The number content of students' abilities is very low with the percentage of cognitive understanding and reasoning respectively 35.26% and 20.41% explaining that students do not understand the content of numbers,

including representation, sequence properties, and operations of various types of numbers (count, integer, fraction, decimal).

In the content of measurement and geometry, the percentages for application and reasoning abilities are 38.68% (very low) and 49.06% (low) from this data, it is concluded that students' ability to recognize flat shapes to use volume and surface area in everyday life days and an understanding of the measurement of length, weight, time, volume and discharge, as well as units of an area using standard units. Data content and uncertainty for understanding and reasoning are relatively low with percentages of 45.35% and 47.2% respectively, indicating that students' ability to understand, interpret and present data and opportunities are still low. The overall numeracy ability of students is very low, this is due to the limited knowledge of mathematics and mastery of concepts that students have. Students have not been able to analyze data and information, make conclusions, and expand understanding in new situations or more complex contexts. The literacy and numeracy skills of junior high school students in North Aceh and Lhokseumawe can be seen in Table 3.

Table 3. Literacy and Numerical Literacy Ability of Students

Aspects	AKM Components (Content/Cognitive Ability)	Percentage
Literacy	Information text/ finding information	48.43
	Information text / evaluation and reflection	14.29
	Information text / interpretation and integration	40.00
	Literature text/ evaluation and reflection	32.01
	Literature text/ interpretation and integration	84.64
	Average	43.87
Numeracy	Numbers/ understanding	35.26
	Number/ reasoning	20.41
	Measurement and geometry/ application	38.68
	Measurement and geometry/ reasoning	49.06
	Data dan uncertainty/ understanding	45.35
	Data dan uncertainty/ reasoning	47.20
	Algebra/ application	33.40
	Algebra/ reasoning	17.91
	Average	33.91

CONCLUSION

This research provides a comprehensive profile of literacy and numeracy skills, enabling mapping of student abilities across key components of content, cognitive processes, and context. Based on the findings of research conducted on students who took part in the National Assessment of literacy and numeracy skills, the following results were obtained, literacy skills, the average percentage score for literacy skills was 43.87%, included in the "low" criteria range. This indicates that students have not demonstrated the ability to effectively find and retrieve explicit information from texts or make simple interpretations. Meanwhile, numeracy skills obtained an average percentage score of 33.91% which fell into the "very low" criteria category. This shows that students have limited knowledge and mastery of mathematical concepts. Additionally, they have not demonstrated the capacity to analyze data and information, draw conclusions, or apply their understanding to new or more complex situations. These results emphasize the need for serious and integrated efforts to address students' literacy and numeracy abilities, especially regarding the AKM component. To achieve this, there is a need to design tailored learning programs and utilize textbooks that are specifically geared towards improving and developing literacy and numeracy skills among students. This proactive approach will play a critical role in improving students' overall educational outcomes and preparing them to participate more effectively in academic and real-world contexts. This research is still limited to analyzing students' literacy and numeracy skills based on AKM components. Further research can be carried out to improve junior high school students' literacy and numeracy skills through the application of appropriate learning models or media.

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