

Analysis of Numerical Aspects in School Education Report Cards (Case Study at a State Middle School in Bandung City)

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Abstrak

Penelitian ini fokus pada menyelidiki faktor-faktor utama yang menjadi sebab atau berpengaruh pada hasil nilai rapor Pendidikan pada khususnya aspek numerasi. Penelitian berfokus pada bagaimana pembelajaran matematika berjalan selama setahun sebelum diadakan Assesmen Nasional. Penelitian ini merupakan penelitian studi kasus, dengan subjek penelitian merupakan siswa kelas VII, Guru, dan Kepala Sekolah dari sebuah SMP Negeri di Kota Bandung. Pengumpulan data menggunakan teknik wawancara dan observasi. Hasil penelitian menunjukkan bahwa Pandemi Covid-19 merupakan masalah terbesar yang berimbas pada kurang optimalnya proses pembelajaran, kebijakan Pembelajaran Jarak Jauh (PJJ) yang bersifat mendadak dan tidak ada persiapan menyebabkan kurangnya kesiapan guru dalam mempersiapkan pembelajaran berbasis IT. Tipe soal AKM yang bersifat baru, sehingga siswa kesulitan memahami maksud dari soal. Selain itu, temuan bahwa capaian menalar siswa lebih tinggi daripada kemampuan mengaplikasikan merupakan data yang tidak sesuai dengan teori taksonomi Bloom dan perlu penelitian lebih lanjut.

Kata kunci: Assesmen Nasional, Numerasi, Sekolah Menengah Pertama

Abstract

This research focuses on the major elements that cause or influence the outcomes of educational report cards, particularly in the area of numeracy. The study focuses on how students learn mathematics throughout the year leading up to the National Assessment. This research employs case study method. The 7th grade students, teachers, and principals from a public junior high school in Bandung were involved in this research. Interview and observation were used to obtain data. The study's findings show that the Covid-19 epidemic is the most significant factor influencing the less-than-optimal learning process, and that a Hastily implemented Distance Learning policy results in a lack of teacher competence in preparing IT-based learning. Because the type of AKM questions was considered new, therefore students are having difficulties understanding them. Furthermore, the result that students' reasoning achievement is higher than their ability to apply is contradictory to Bloom's taxonomy hypothesis and warrants further investigation.

Keywords: National Assessment, Numeration, Junior High School

1. INTRODUCTION

Since 2002-2020, Indonesia implemented the National Examination or National Final Examination as a measure of educational success. Utilization of UN or UAN results as the only instrument for measuring student success during the learning process turns out to be less effective. The following is a graph of the average UN scores from 2015 to 2019 (Puspendik Kemendikbud, 2022):

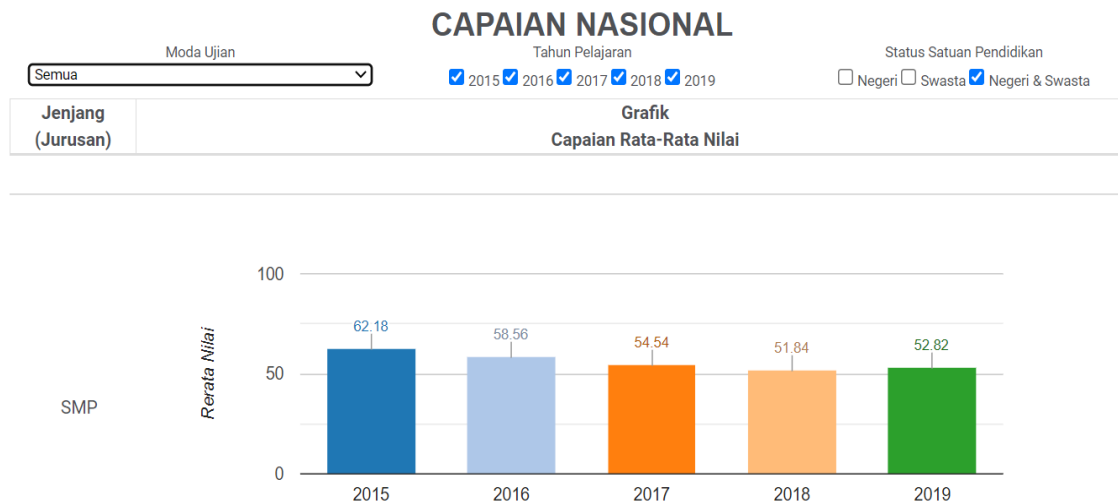


Figure 1. Graph of average National Examination Scores for 2015-2019

In 2015, the average National Examination score was 62.18 or around 60% of the maximum ideal value. However, according to the 2015 PISA report, it showed that the quality of the education system in Indonesia was ranked 62nd out of 72 participating countries in all and continued to decline in 2018 to rank 74th out of 80 participants (PISA). This shows that there are differences in the assessment indicators that need to be addressed, in line with the statement Head of the Research and Development Agency of the Ministry of Education and Culture, Totok Suprayitno, in 2019, that explained that in its development, what students need is no longer mastery of information, but reasoning (Tempo, 2019). So, there needs a new measurement tool to capture the success of education in general and the learning process in Indonesia (Tuankotta & Jana, 2021). This is followed by students and is designed to measure reading literacy and numeracy as cognitive learning outcomes. Second This minimum competency aspect is a requirement for students to contribute to society, regardless of work field and the careers they want to pursue in the future. The Character Survey was followed by students and teachers, to measure attitudes, habits, and values as non-cognitive learning outcomes. Therefore, the Ministry of Education and Culture has implemented a new program called the National Assessment as a substitute for the National Exam which started to be implemented in 2021. The preparation of the National Assessment is based on an assessment of reasoning using language (literacy) and reasoning based on numerical data (numeration) based on the concept Program for International Student Assessment (PISA) (Nehru 2019). This aims to see and comprehensively assess the quality of teaching and learning processes and student learning outcomes at all levels of education from elementary to secondary levels. In addition, it is hoped that it can encourage an increase in the quality of education units by focusing on improving the quality and quality of learning.

Learning by focusing on reasoning is different from ordinary or conventional learning, starting from the process, assessment, and evaluation must support to improve students' critical thinking. Even though learning process focuses on student-centered, but the pedagogic competence should still be possessed by teachers (Fauzan and Herman, 2016). The numeration aspect in the National

Assessment is divided into 5 Sub-Materials which consist of; Numbers, Algebra, Geometry, Data, and Uncertainty, as well as the 3 skills of knowing, applying, and reasoning. School employed as the study's subjects in this study (later stated as SMP Negeri A) is a middle school in the city of Bandung which was founded in 2019, and was only formally inaugurated in 2021 as one of the pilot schools in the city of Bandung. This school has participated in the National Assessment in 2021, and received a literacy score of 2.18 with a description above the minimum competency, and a numeric value of 1.84 with a description of achieving the minimum competency. As a pilot school, SMP Negeri A has various limitations, especially in terms of facilities and infrastructure, in this case the Bandung City Education Office has given special attention to encourage its development.

Even though it has exceeded the National, Provincial, and City average scores, the main attention needs to be given to the numeration aspects that have just reached the minimum competency score. It is necessary to study more deeply about what causes the value in the numeracy aspect to be still below the literacy competency value within the scope of the school and only achieve minimum competence in general. This aims to be a reflection for schools and teaching practitioners as a reference for designing learning that can increase the value of the National Assessment on the aspect of numeracy. The numeration aspect captures and maps the quality of schools and education as a whole, presents problems in a variety of contexts that are expected to be able to completed by students using their literacy and numeracy competencies. The numeration aspect is also intended to measure competence in depth, not just content mastery.

2. METHOD

An explanation-focused case study was chosen as the research methodology. This strategy is employed because, in reality, it seeks to discover or investigate fundamental concepts and intends to gather knowledge, knowledge, and data on concepts that are not yet understood. The researcher starts with the results of independent report cards from a public middle school in Bandung and tries to reveal or explain the information so that readers can get a general understanding of the elements and factors that contribute to and have an impact on a school's numeracy components. In order to gather primary data in the form of information, which serves as the first data required, a number of questions are utilized as the only data instrument. Data mining was conducted using a variety of context-rich information sources (Creswell, 2015).

The case subjects in this study were teachers, students, and the school environment. The subjects analyzed were comprised of a single unit that was viewed as a case (Voss et al., 2002). The participants in this study were volunteers who were chosen using a purposive strategy with aid and knowledge from important individuals during semester two of 2021. Observational and interview-based data collection techniques. Three participants were interviewed by the researchers: the school administrator for the 2020–2021 academic year, one teacher who taught class VII during that school year, and one student who participated in the national assessment

3. RESULT AND DISCUSSION

Following are the Grades of State Middle School A Education Report Cards on the Numerical aspect:

Table 1. State Middle School Education Report Card

Indicator	Mark
Numerical ability	1.84
Proportion of students with Advanced numeracy abilities	2.22%
Proportion of students with proficient numeracy skills	62.22%

Indicator	Mark
Proportion of students with basic numeracy skills	35.56%
Proportion of students with numeracy skills Requires Special Intervention	0%
Competence in the domain of Numbers	58.51
Competence in the Algebra domain	58.88
Competence in the Geometry domain	57.21
Competence in the Data and Uncertainty domain	56.57
Competence to know (L1)	59.42
Competency to apply (L2)	54.57
Reasoning competence (L3)	58.61

The numeration aspect with a score of 1.84 with a description of achieving minimum competency, with the proportion of students who are proficient, proficient, basic, and need special intervention is presented in a separate diagram as follows:

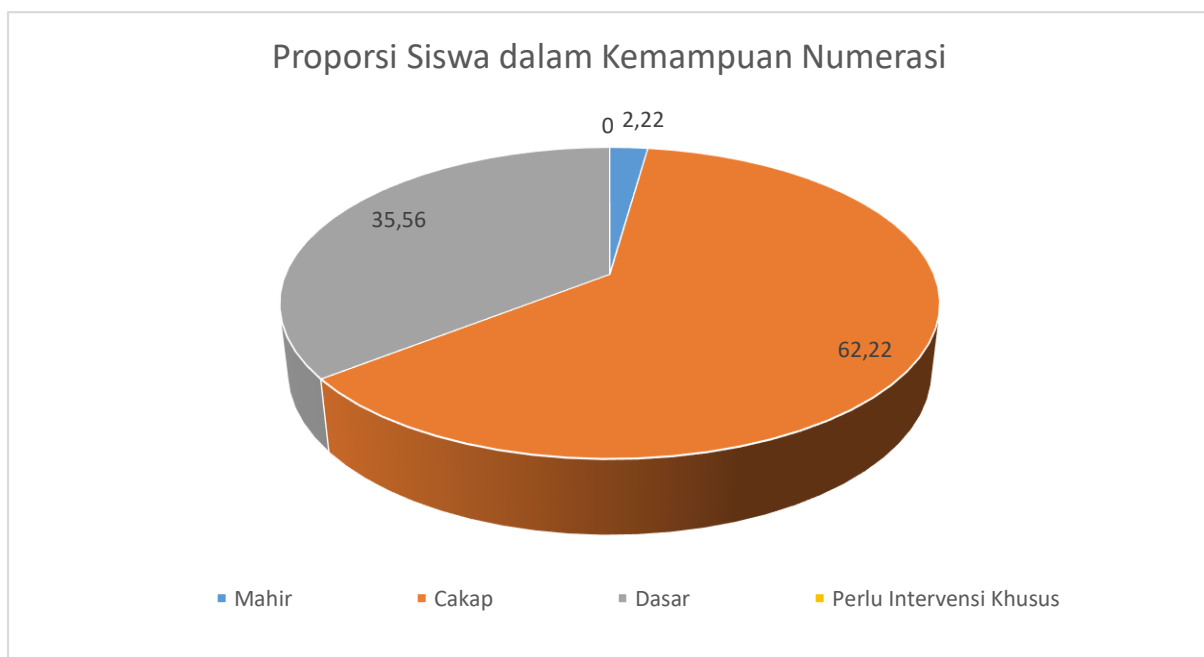


Figure 2. Proportion of Students in Numeral Ability

Students' numeracy skills were dominated by students in the Proficient category, namely 62.22%, followed by students in the Basic category, namely 35.56%, and students in the Advanced category, namely 2.22%, with no students who were in the category needing special intervention. From this data it can be seen that the majority of students are still in the sufficient category, therefore the learning that must be done is how to increase students from moderate to proficient. Meanwhile, from the point of view of the subject matter, the proportion of students is presented in the diagram as follows:

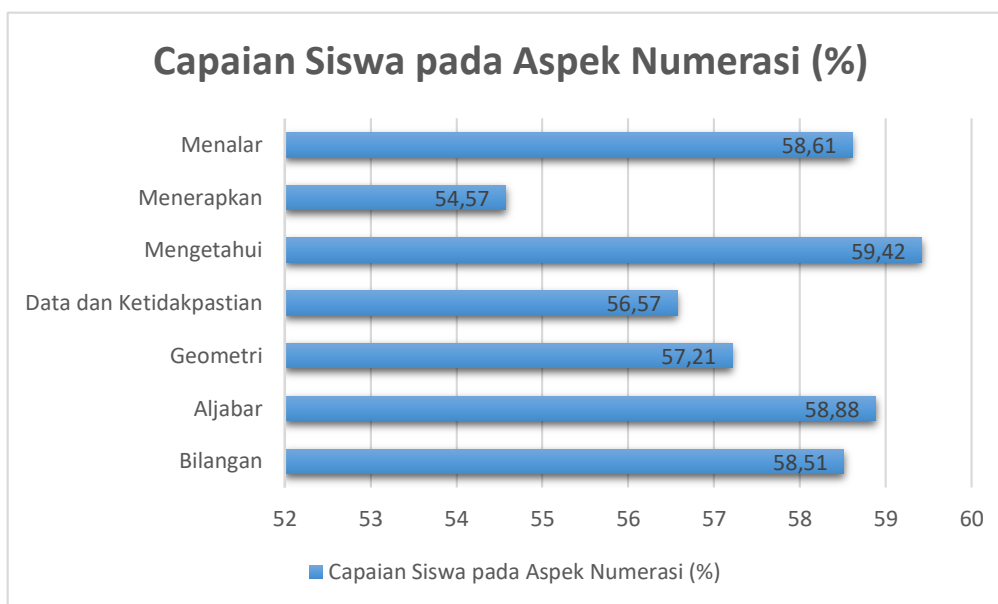


Figure 3. Student Achievements in Numerical Aspects

Based on the material, algebra material is higher than other material with an achievement level of 58.88% even though the difference is relatively small, only around 1-2%. Meanwhile, in terms of the level of thinking, the highest level is knowing with an achievement of 59.42%, followed by the level of reasoning with an achievement of 58.61%, and the level of knowing with an achievement of 54.57%.

Researchers focused on two aspects, namely school internal and external school factors. From these aspects the researcher breaks down the internal factors which consist of; educators, students, learning processes, and infrastructure. While External Factors, namely the environment where the school stands. External factors, researcher's values need to be considered in building conclusions because of the zoning policy on Permendikbud Number 14 of 2018 which requires schools to accept prospective students who are domiciled in the radius zone closest to the school of at least 90 percent of the total number of students accepted. This has an impact on a more homogeneous school culture in accordance with the area where the school is located.

A. Educator Factor

Class VII consists of 4 classes, which are taught by one Mathematics teacher, namely Mrs. A. Mrs. A admits that it was difficult to teach mathematics to class VII during the Pandemic. Mrs. A is a middle-aged teacher with limited IT skills. She admits that during the Covid-19 pandemic, learning was carried out only through assignments with the help of the Whatsapp Group, sometimes interspersed with the task of listening to online videos and summarizing books. Mrs. A realized that the distance learning she was doing was less effective than face-to-face learning at school. However, the limitations of mastering IT and implementing distance learning are the biggest obstacles.

Regarding the score of each material, Ms. A believes that Algebra and Numbers are the material taught in class VII in the curriculum and syllabus, while Data and Geometry are taught in advanced classes (VIII and IX). Regarding the inability of teachers to master IT, it was a problem for National Education during the Covid-19 Pandemic. In accordance with the data quoted from the Indonesian Teachers Association (IGI), Lestari Moerdijat, deputy chairman of the MPR at that time revealed

that based on an evaluation of the implementation of Distance Learning (PJJ) implemented in August-November 2020 it was recorded that 60% of teachers had very poor skills in using information technology when teaching. This is a new finding, because according to Permendiknas No. 16 of 2007 one of the competencies that must be mastered by teachers is professional competence, and one of them is IT mastery.

The findings made by Gurung in 2021 also support this finding, that in some groups of teachers, there are still teachers who have difficulty mastering IT in learning. This depends on the age factor and access to technology and the internet. And of the 420 teachers who were the subject of the study, there were around 14% of teachers who did not carry out online learning properly, with these constraints.

B. Student Factors

Through the results of the researcher's interview with one of the NL students, he revealed that the main difficulty was the type of problem that was different from what he was used to doing. He had difficulty understanding the meaning of the questions, and how to answer questions properly. The types of AKM questions are indeed different from the types of UN questions, usually the questions given are in the form of Multiple Choices or Essays, but in AKM the types of questions can be true-false, matchmaking, etc. (Ministry of Education and Culture). NL also revealed that in working on AKM questions he often had difficulty grasping the meaning of what he got in the questions. According to NL, he believed that AKM questions discussed things he did not know and often confused him. Due to the lack of availability of data regarding the AKM question paper in 2021.

C. Learning Process Factors

In 2020, students are required to carry out distance learning (PJJ). This was the impact of government policies regarding large-scale social restrictions (PSBB) which were enforced at that time in order to suppress the spread of the Covid-19 virus. Mrs. A, who was a mathematics teacher at that time, according to her statement, revealed that learning was carried out through the WhatsApp application. Whatsapp is a social media platform that is not specifically used as a Learning Management System (LMS), so it is not effective in supporting the learning process. Even so, research conducted by Dhahir, in 2021 shows that Whatsapp has an adequate category based on usability indicators from ISO for HCI in 2001.

Most of the learning carried out using whatsapp is assignments, with the contents of the assignments in the form of questions that are evaluative and not constructive. Students tend to learn independently and feel there "impression of loneliness", namely the absence of two-way communication (interaction) between the teacher and students. This is in line with Noer's opinion in Husamah (2019). It is also in accordance with the findings of the researcher, that NL as a student feels that he is not facilitated in learning and learning that only takes place is a series of tasks that he has to do but he cannot ask if he is experiencing difficulties. Other findings indicate that the tasks given are in the form of questions that are theoretical and not applicable, so they do not develop students' reasoning abilities as required by the National Assessment and students' understanding is procedural in solving questions not solving problems.

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D. Facility and Infrastructure Factors

As one of the pilot schools, SMP Negeri A institutionally has no deficiencies in terms of IT hardware facilities, all teachers are provided with inventory in the form of laptops and learning facilities at school are also adequate for conducting online conferences and IT-based learning media. However, schools do not yet have their own LMS that can be used. Schools are of the opinion that many LMS are public in nature such as Edmodo, Google Classroom, Moodle, etc. which can still be used to regulate the course of learning, this is also supported by valid studies (Hussaini, 2020; Gudkova, et.al, 2021; Shit, 2020).

Even so, apart from the teacher's limitations in mastering IT, there are other limitations in implementing PJJ, namely students' limitations in access to the internet. It turns out that the findings in the field are that many students still have difficulty accessing the internet with various factors, ranging from economic limitations and limitations in mastering IT. This is also in line with data from the Central Statistics Agency (Central Statistics Agency, 2020) in 2019 which shows that in general, access to the internet for students in West Java is still around 54%. It should be understood that this internet access is still in general, there is still a possibility that internet access used for learning is lower than that.



Figure 4. "Ngaprak" program for dealing with students with limited facilities

An effort from the school to overcome this is to visit students who do not have Internet access, called the "Ngaprak Program", the system is that every Friday the teachers spread out to students' homes to provide in-person teaching. Although similar practices have been carried out in MTsN 3 Bantul, and Kampung Buku in Cibubur, both of which have produced positive outcomes (Ministry of Religion 2021 and Malihah, et al. 2020). However, this is the writer's opinion that it is less effective

because it is limited by human resources amidst the large number of students who need these services.

E. School Environmental Factors

According to the Headmaster's statement, SMP Negeri A is located in an area with the characteristics of its people who uphold culture, so that the vision and mission of the school also refers to the potential of this community. Optimizing regional cultural learning is the main focus on the learning process, this is reflected in the school curriculum, and the development of school facilities starting with tools that support culture. According to him, it is also a school culture that students of SMP Negeri A prefer literary works such as poetry, drama, writing, and reading rather than study subjects which are in the science and mathematics family.

This is supported by Cuff's (2017) statement which states that in choosing learning subjects they prefer something that they find fun and useful in life. Students who view mathematics as impractical and difficult prefer to avoid the subject. Even if, in theory, the STEAM approach unites the concepts of math and art, this shouldn't be a barrier (Zubaidah, 2019).

4. CONCLUSION

The Covid-19 pandemic is the biggest problem which has an impact on the less than optimal learning process, the Distance Learning (PJJ) policy which is sudden and unprepared causes a lack of readiness of teachers in preparing IT-based learning. In addition, students' limitations in using devices as access to the internet and learning are also a problem. Online learning is not sufficient to support students, and Gusmawan (2020) suggests the hybrid classroom learning approach with the flipped classroom type because it is thought to be extremely appropriate for the social and environmental culture in Indonesia. The type of AKM questions is new, so students have difficulty understanding the meaning of the questions. Even so, the finding that students' reasoning achievement is higher than their ability to apply is data that is inconsistent with Bloom's taxonomy theory (Anderson & Krathwohl, 2002) even though according to Gusmawan's research (2021) that metacognitive abilities are in line with cognitive abilities so this phenomenon needs further research.

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