



# Literacy and Numeracy Difficulty Factors in the Independent Learning Curriculum

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## Abstrak

PISA 2018 dirilis dari 78 negara Indonesia berada di peringkat ke-70, hanya 25% yang memiliki kemampuan membaca dan 24% kemampuan berhitung. Penelitian bertujuan, untuk menganalisis faktor kesulitan literasi dan numerasi dalam kurikulum merdeka belajar. Metode yang digunakan metode campuran. Subjek adalah siswa sekolah menengah sebanyak 130. Teknik pengumpulan data dengan survei, observasi dan wawancara. Survei dilakukan dengan membagikan instrumen kepada 130 orang melalui google dari skala Likert poin 1-5. Data juga diperoleh saat pengamatan dan wawancara yang dipilih secara acak. Teknik analisis survei dengan SPSS 26, dibentuk diagram batang. Hasil wawancara dianalisis dengan menyajikan data dan menghimpun, kemudian mereduksi dan melakukan coding dalam tabel, kemudian melakukan verifikasi wawancara dengan survei. Hasil dan temuan menunjukkan 48.63% menilai Kelas Dasar sulit dilaksanakan, 67.67% menilai indikator Budaya Sekolah belum maksimal dan 78.54% menilai Community Base minim pelaksanaan. Hasil observasi dan wawancara juga bersinggungan dengan hasil survei, menurut sumber ketiga indikator keberhasilan literasi dan numerasi di sekolah masih belum dilaksanakan sepenuhnya dan belum sesuai harapan kualifikasi. Kesimpulannya, minimalnya implementasi indikator ketiga berdampak pada lemahnya kemampuan literasi dan numerasi siswa. Implikasi dari penelitian ini adalah tugas atau proyek yang dirancang oleh guru untuk siswa membantu dan melatih siswa untuk meningkatkan literasi dan numerasi mereka.

**Kata Kunci:** Kurikulum Merdeka Belajar, Literasi, Numerasi

## Abstract

PISA 2018 was released from 78 countries; Indonesia was ranked 70th; only 25% could read, and 24% could count. The research aims to analyze the factors of literacy and numeracy difficulties in the independent learning curriculum. The method used is a mixed method. The subjects were 130 middle school students. Data collection techniques used surveys, observations and interviews. The survey was conducted by distributing instruments to 130 people via Google on a 1-5 point Likert scale. Data was also obtained during randomly selected observations and interviews. The survey analysis technique used SPSS 26, which formed a bar chart. The interview results were analyzed by presenting the data and collecting it, then reducing it, coding it in tables, and verifying the interview with a survey. The results and findings show that 48.63% assess that the Basic Class is difficult to implement, 67.67% assess that the School Culture indicators are not optimal, and 78.54% assess that the Community Base has minimal implementation. The results of observations and interviews also intersect with survey results. According to the third source, indicators of success in literacy and numeracy in schools still need to be fully implemented and meet qualification expectations. In conclusion, minimal implementation of the third indicator impacts students' weak literacy and numeracy skills. This research implies that assignments or projects designed by teachers for students help and train students to improve their literacy and numeracy.

**Keywords:** Independent Learning Curriculum, Literacy, Numeracy

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## 1. INTRODUCTION

Literacy and numeracy skills are important for accessing broader educational programs because they can be used in many aspects of our lives. literacy is considered to be compatible with thematic learning. This is because literacy focuses on skills to add to learning experiences in everyday life. Education is a forum for students to develop life skills

by having literacy skills in the school environment. *Organization for Economic Cooperation and Development* (OECD) released its findings in 2018, they published their findings and research results regarding the Program for International Student Assessment (PISA) score results, literacy and numeracy abilities of students from Indonesia. is below the set average standard (Sarmurzin et al., 2021). Based on data, of 78 countries, Indonesia is ranked 70th. Based on the percentage results, only 25% of students have perfect reading skills and 24% of students have math skills. This data confirms that 75% of students in Indonesia have problems with literacy skills and 76% have problems with numeracy skills (Hu & Yu, 2021; Sarmurzin et al., 2021). In a study conducted by UNESCO, of the 61 countries surveyed, Indonesia was ranked 60<sup>th</sup> (Damanik, 2020). This finding is further strengthened based on data from the Central Statistics Agency in 2022 which states that the level of interest in reading among Indonesian people as a whole is at 59.52 with a reading duration of 4-5 hours per week and 4-5 hours per week. books per quarter (Sari et al., 2020). This is still far from expectations. Previous research also noted that students' interest in numeracy is very low. It was recorded that only 36.33% of students from Indonesia had an interest in arithmetic (Laksono & Wulandari, 2021). This research noted that there were 63.69% of students who had no interest in arithmetic.

However, in reality in the field, students' abilities in literacy and numeracy will not experience significant improvement until 2023 (Rafiq et al., 2023). This is proven by the understanding, knowledge and learning outcomes of many students who are still below the KKM. Another fact from the identification results shows that teachers do not understand the concept of minimum competency assessment, both the national exam minimum competency assessment and the class minimum competency assessment. Do not have adequate skills in developing Minimum Competency Assessments which include: literacy and numeracy minimum competency assessments, character surveys, and learning environment surveys. Do not have sufficient skills in making HOTS questions (Hasanah et al., 2021). Teachers should provide tutoring classes for students who experience delays in literacy and numeracy (Widyastuti, 2020). Tutoring is conducted after each lesson. His research noted that of the 100% of students studied, 46% took literacy and numeracy tutor classes. Even though the implementation of the independent learning curriculum has been carried out at the research location. The success of the curriculum cannot be separated from the three indicators that determine it, namely class foundation, school culture, and class basis. However, based on the facts above, it is necessary to evaluate the impact of implementing the independent learning curriculum so far.

The government provides a solution to the problem of low interest and low ability of students in literacy and numeracy by presenting an independent learning curriculum. The hope is that the independent learning curriculum can be a tool in overcoming the low literacy and numeracy of Indonesian pupils and students (Alban Conto et al., 2021; González-salamanca et al., 2020). In the independent learning curriculum there are three indicators that determine the success of literacy and numeracy, namely class foundation, school culture, and class basis (Astuti & Ar, 2023; Rasmitadila et al., 2020). Indicators that measure the success of literacy and numeracy are the basis for the process of implementing literacy and numeracy which is called the elementary class. Things that need to be measured and evaluated based on class, the amount of training for mathematics teachers and non-mathematics teachers must be available and scheduled well and clearly, the amount of mathematics learning must be problem-based and project-based, every mathematics learning must include elements of numerical literacy, literacy and numeracy assessments must use clear Minimum Competency Assessment standards, school grades. School culture as measured by this indicator is the availability of the number of books and the variety of literacy books that must be complete and can be used by students in arithmetic, the borrowing

of numeracy literacy books is not limited by the school, the presentation of complete information about numeracy modeling, the literacy and numeracy WEB is available and easy accessible, testing activities are carried out every week, clear funding to support literacy and numeracy success, schools work together with teams in training teachers, schools have structured regulations. Community Base or communication space. Indicators are assessed from the success of public learning spaces around the school, complete with reading literacy and numeracy, the amount of involvement and participation carried out by parents (Alban Conto et al., 2021). Previous research findings stated that workshop activities were effective and increased teachers' knowledge in arts education-based literacy and numeracy (Yayuk et al., 2023). There was an increase in the development of skills and numeracy in the group of students who were not yet fluent in reading and improved in the group of students who were already fluent in reading (Shabrina, 2022). Research wants to know the effectiveness of school culture and research wants to know the effectiveness of community bases and communication spaces. This research aims to analyze the factors of literacy and numeracy difficulties in the independent learning curriculum. This study records and explains the advantages, obstacles and difficulties of the independent learning curriculum which are measured through three indicators of success, namely classroom foundation, school culture and class basis.

## 2. METHODS

The research method used is a mixed research method (Clifford et al., 2018; Broadhurst & Harrington, 2016). The mixed research used in this study combines survey data findings, direct observation and interviews. Survey data is aligned with interview data and the intersection results are visible. Intersecting data becomes a conclusion. The subjects in this research were students at junior high schools in North Tapanuli Regency. The research subjects were 130 students who were in junior high school and were directly involved in the learning process to improve literacy and numeracy. The population of this study were all junior high school students in North Tapanuli Regency, while the research sample was taken randomly, totaling 130 people.

The data collection technique in this research started from the initial stage by conducting a survey of 130 people. Instruments that have been prepared based on indicators of student success in understanding literacy and numeracy were created on Google and the instruments were distributed to junior high school students and female students. The indicators that are used as a reference and measured are class base indicators, school culture indicators, and class base indicators. Survey results are collected and analyzed. This research also collects data through interview sessions, informants are selected randomly and the research ensures that the informants selected are people who are directly involved in the implementation process. In this interview session, 20 informants were selected as respondents. The interview sheet was prepared by the researcher based on the indicators measured. This research also obtained direct observation results at school. This research compiled a checklist sheet to ensure that indicators of success in implementing the independent learning curriculum have been implemented or not implemented in the schools observed. This research collects observation data from each school. Two schools are supervised directly. Direct observation data serves as a benchmark and support in ensuring that the data obtained from surveys and interviews are correct and relevant. The intersection data between observation, interview and survey data is interpreted into sentences and conclusions (Wang & Cheng, 2020; Farquhar et al., 2020; Littenberg-Tobias & Reich, 2020). Indicators and instruments are presented in Table 1.

**Table 1. Indicators and Instruments**

<b>Number</b>	<b>Indicator Number</b>	<b>Instrument</b>
1	Basic Class	The amount of training for mathematics teachers and non-mathematics teachers must be available and scheduled well and clearly; The amount of mathematics learning should be problem-based and project-based; Every mathematics lesson must include elements of numerical literacy; Literacy and numeracy assessments must use the Minimum Competency Assessment standards, clear school values
2	School Culture	The availability of a number of books and a variety of literacy books that must be complete and can be used by students in calculating; Borrowing numeracy literacy books is not limited by schools; Presentation of complete information about numeracy modeling; WEB related to literacy, literacy and numeracy information sources are available and easy to access; Test activities are carried out every week to measure students' numeracy literacy skills; Clear funding to support student literacy and numeracy success in schools; The school collaborates with the team in training teachers and students who are directly involved in the school; The school has conceptualized and developed rules for implementing literacy and numeracy.
3	Community Base or communication space	Public learning spaces around the school are complete for reading literacy and numeracy; Lots of parental involvement and participation in teams formed to support school literacy; And the number of public sharing sessions regarding numeracy literacy that are complete and clear

(Jufriadi et al., 2022; Suryaman, 2020; Noviyanti, 2023)

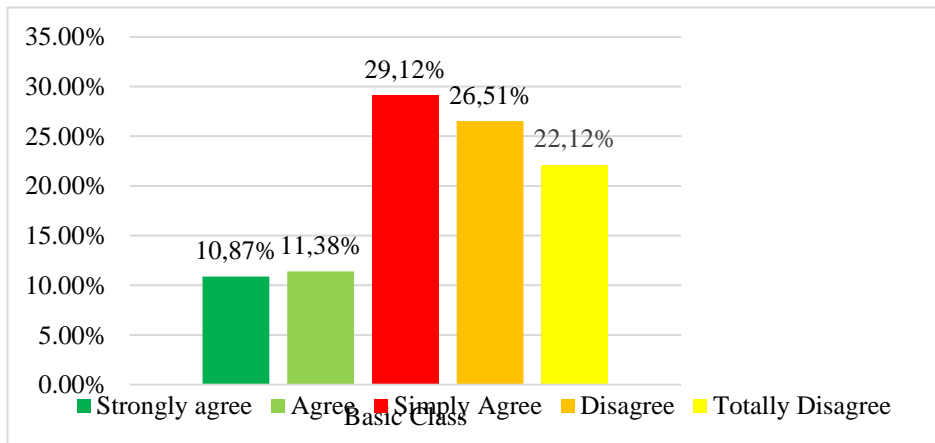
In measuring student literacy and numeracy, it is measured by how the class base is formed and planning in class (Schmid et al., 2021; Hyman et al., 2020). The development of literacy and numeracy was due to the support of school slaves and teacher-guided school and classroom planning (Sánchez-Rivas et al., 2023; Rapanta, 2021). In looking at increasing the literacy and numeracy of taught students, schools and teachers must prepare three main indicators, namely class base, school support and communication space between students and students, students and teachers, students and parents and teachers and parents (Hernandez, 2022). Data analysis technique. Survey data obtained by this research was collected in Excel and analyzed using SPSS 26 (Joseph et al., 2020; Singh & Kumar, 2021). The data collected in the survey was analyzed using SPSS version 26 and the survey results were formed in a bar chart. There are only three bar charts that are formed and correspond to indicators of student literacy and numeracy success. Survey data was analyzed using SPSS version 26 by looking at the average and the location of the difficulties. Difficulties and factors that influence difficulties in understanding literacy and numeracy are interpreted in sentences. Observation data and interview data were also analyzed by following stages, collecting all data, and forming tables. The data obtained during observations and interviews are all collected into one file. Then the research carried out data reduction, and the collected data was reduced one by one. Data that is not related to each other is removed or subtracted from the table, while data that is related to each other is combined and a coding table is created. Data that has been coded and the coding results of observations and interviews are verified

against the data resulting from survey analysis. Data that intersects the results of observations, interviews and surveys is the final result and is the basis for drawing conclusions.

### 3. RESULTS AND DISCUSSION

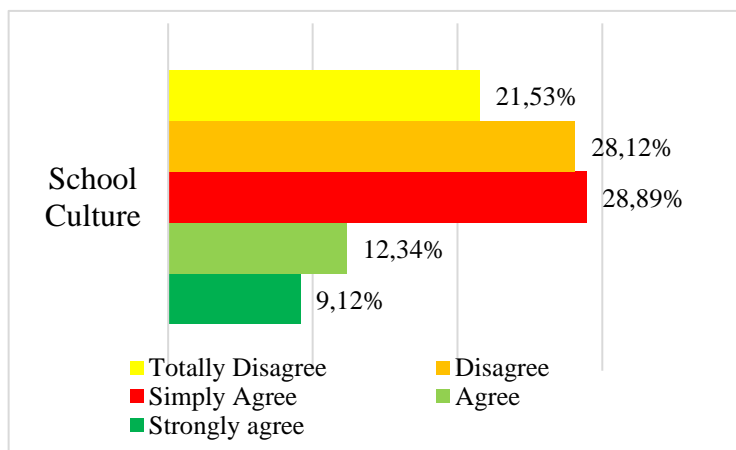
#### Result

This research found obstacles and difficulties in implementing the independent learning curriculum in improving literacy and numeracy. Based on the results found in this research for basic class indicators, respondents assessed that schools have not carried out routine training for mathematics teachers in developing numeracy skills, teachers who teach in the independent learning curriculum have not given project-based assignments to students, and teachers have not presented material in module form. , so that elements of literacy and numeracy are not included in the learning process, the resource person assesses that the teacher in carrying out the assessment also does not comply with clear minimum competencies. The following are respondents' responses to basic class indicators. The results of the class basis indicators are presented in [Figure 1](#).



**Figure 1. Class Base Indicator Results**

Based on [Figure 1](#), it can be seen that respondents rated the class base indicator at 22.12%, and 26.51% strongly disagreed and disagreed. In this case, there is a total average of 48.63% of respondents who hope that basic learning can be carried out well in schools that use the independent learning curriculum.



**Figure 2. Assessment of School Culture Indicators**

Figure 2 shows that 21.53% strongly disagree with the assessment of school slave indicators in the implementation of the free learning curriculum and 28.121% disagree. Even though there were 9.12% and 12.34% who said they strongly agreed and agreed, the research noted that only students who had good abilities agreed. Meanwhile, 78.54% hope that school culture indicators can be implemented well in accordance with the expectations of the independent learning curriculum in developing student literacy and numeracy at school.

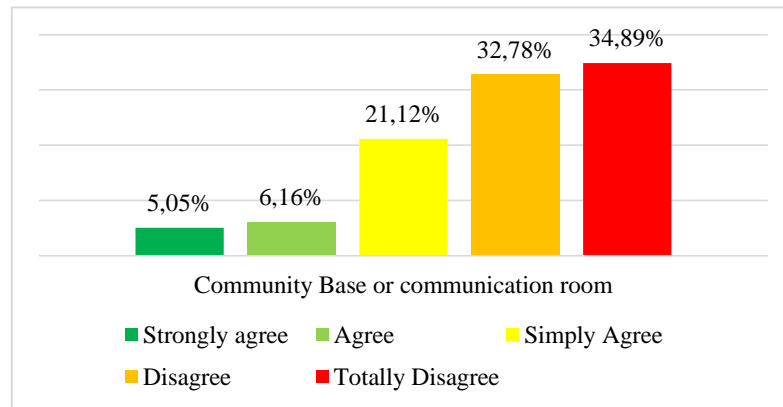


Figure 3. Community Based Indicator Assessment Room or Communication Room

Table 2. Coding Interview Results

Number	Indicator	Interpretation Results
1	Basic Class	Not all schools that use an independent learning curriculum have provided training for mathematics teachers, but teachers have tried to use problem-based projects as learning. Not all schools include literacy in the learning process, assessing students' literacy skills is still minimal. Unclear assessment has an impact on low student learning outcomes
2	School Culture	Not all schools provide various literacy books. The impact of borrowing literacy books is still limited, more than 60% of schools do not yet have a literacy and numeracy WEB. Teachers have carried out weekly tests and exercises but funds for literacy and numeracy training are insufficient. Schools do not have cooperation in organizing training for teachers in the field of literacy and numeracy
3	Community Base or communication space	More than 60% do not have space to develop literacy and numeracy. The lack of parental involvement in literacy and numeracy in schools and literacy sharing sessions remains unclear

The survey in Figure 3 and interview results in Table 2 also found that respondents considered the learning spaces around the school to be inadequate for developing literacy and numeracy. This has an impact on the minimal involvement of parents in helping teachers teach literacy and numeracy. Meanwhile, in the independent learning curriculum, parents are expected to be involved in teams formed for literacy and numeracy at school. Another impact is that the distribution of literacy and numeracy groups in schools is non-existent and does not match expectations in the independent learning curriculum. The results of the respondent's assessment were 34.89% and 32.78% strongly disagree and disagree with the

Community Base or communication space indicators. This data shows that 67.67% expect there to be community and communication spaces in every school.

## Discussions

The first finding shows that respondents still assess that the implementation of the independent learning curriculum is not optimal in improving students' literacy and numeracy skills at school. This happened because the data found that schools had not maximized teacher competency, such as providing curriculum training to teachers, providing facilities to teachers in compiling material and applying literacy and numeracy to material as well as a lack of support from school leaders in providing training to teachers to learn to prepare learning plans and appropriate methods. Teachers must also be equipped and given training on how to assess and evaluate students' basic competencies and must refer to curriculum standards. The lack of training provided has an impact on student achievement of learning outcomes. Students' literacy and numeracy difficulties stem from inadequate teacher preparation (Hussein et al., 2020;Huang & Zhao, 2020;McDougal et al., 2020).Teachers in their daily teaching activities must be equipped with adequate competence in compiling material and learning (Iivari et al., 2020). In (Mishra et al., (2020) said that teachers in understanding the curriculum must be given continuous and structured training (Mishra et al., 2020). The obstacle to implementing literacy and numeracy lies in poor planning (Khorasani et al., 2020;Al-Samarraie et al., 2020;McDougal et al., 2020).

The second finding shows that central schools do not yet have complete books to support students' understanding of literacy and numeracy. This has an impact on students' ability to understand their low numeracy skills. The availability of a complete number of books and a variety of literacy books that can be used by all students in the field of arithmetic is still incomplete (Baharuddin, 2021; Yeh et al., 2020). The current independent learning curriculum hopes that students will not only borrow literacy and numeracy books, but schools and teachers must also prepare themselves to provide literacy and numeracy knowledge. Teachers must prepare themselves to provide complete information about how to understand literacy and numeracy. Teachers must design the lessons they teach by including elements of literacy and numeracy (Kholik et al., 2022; Lumbantoruan & Simorangkir, 2023). Schools should be able to provide training to teachers in utilizing technology. The technology that teachers receive during training can be used to organize and design learning to make it more interesting to read and easier for students to understand. Teacher training will have a positive impact on the learning process, teachers will encourage students to read and understand various ways of calculating, but in the findings of this research it turns out that there is no training provided by the school. From the survey, it can be seen that teachers carry out tests every week to see students' literacy and numeracy development. However, the findings also show that teachers in assessing student literacy and numeracy are not optimal and do not comply with the rules for assessing literacy and numeracy. Test activities are carried out every week to measure students' numeracy literacy abilities. Findings also show that there is no school funding to support student literacy and numeracy. Clear funding to support student literacy and numeracy success in schools (Choi et al., 2017; Rohim et al., 2021).

The school also does not collaborate with any institution in developing student literacy and numeracy by providing training to teachers who are directly involved in the independent curriculum. In developing students' knowledge and understanding regarding literacy and numeracy, schools must prepare teachers by providing literacy and numeracy training as well as training in designing literacy and numeracy tests for students (Begum et al., 2021; Sagita et al., 2022). The lack of public space for literacy and numeracy communication shows that schools are still limited in the space provided for communication in developing students' abilities in literacy and numeracy. Lack of student communication

with the environment slows down students' knowledge and understanding of literacy. During the interview, the interviewee hoped that schools would create public spaces that parents could use to discuss and help students understand the surrounding environment. Public spaces are one way to help students with literacy (Alalwan et al., 2020; Sarmini et al., 2020; Suryaman et al., 2020; Hoque et al., 2022). The third finding shows that there are no classes in the school that use an independent curriculum in the learning process or teachers at the school. The lack of training in schools in understanding the independent curriculum has an impact on students' low understanding of literacy and numeracy. Although teachers are hampered by lack of training, teachers try to use problem-based projects as classroom learning. The problem-based project used by teachers is an independent learning curriculum method. Informants also acknowledged weaknesses in assessing students who were given project-based assignments. This has an impact on student learning outcomes that do not meet expectations. Apart from that, not all schools have various literacy books in their schools. This has an impact on students' literacy and numeracy development. Students are limited in borrowing available books. Schools and teachers also do not yet have a WEB as a forum for developing students' abilities in literacy and numeracy. Meanwhile, in the independent learning curriculum, it is hoped that every school will have a WEB as a source of literacy and numeracy books.

The teachers have held weekly tests and practice for students, but funds for literacy and numeracy training are insufficient so they have to buy tools and books. Apart from that, the informants also said that schools do not yet have collaboration in conducting training for teachers in the field of literacy and numeracy. It is the duty of schools and the government to provide facilities for teachers to develop skills and prepare themselves to implement an independent learning curriculum. Parental involvement in developing student literacy and numeracy is very minimal. This is because schools do not have public spaces that can be used as places for discussion and group communication between parents, teachers and students. This research implies that schools and teachers improve themselves by providing services and implementation in accordance with what was found in this research. The school has provided free learning curriculum training to teachers. Teachers are given training on how to cover material in the free learning curriculum which can develop students' literacy and numeracy in junior high schools. Schools are also starting to create WEBs and compile E-books that can be accessed by junior high school students. This finding is reinforced by previous research findings stating that the success of student literacy and numeracy is determined by thorough preparation before learning begins, completeness of learning tools, and the teacher's ability and knowledge in designing literacy and numeracy teaching to students (Darma et al., 2019; Gustian et al., 2023). The workshop activities were effective and increased teachers' knowledge in arts education-based literacy and numeracy (Yayuk et al., 2023). There was an increase in the development of skills and numeracy in the group of students who were not yet fluent in reading and improved in the group of students who were already fluent in reading (Shabrina, 2022). The weakness of this research is that it has not developed learning materials in junior high schools and has not designed an effective learning model to support student literacy and numeracy. This research is only limited to evaluating and analyzing difficulties in understanding literacy and numeracy. The implications of this research are assignments or projects designed by teachers for students to help and train students to improve their literacy and numeracy.

#### **4. CONCLUSION**

The research results show that indicators of literacy and numeracy success in schools are still not fully implemented and do not meet qualification expectations. In conclusion,



minimal implementation of the third indicator has an impact on students' weak literacy and numeracy skills. Recommended pFurther research can investigate to find out the appropriate treatment model to develop student literacy and numeracy.

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