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Reading Speed and Comprehension Levels Among Vocational Students in an Industry Internship Program

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Abstract

Background: Reading quickly and with adequate comprehension is essential for managing the growing volume of information, yet the reading proficiency of Indonesian students and the national digital literacy level remain low to moderate.
Objective: This study aims to describe the reading speed, reading comprehension and effective reading ability of vocational school students participating in an internship program at PT Syntax Corporation Indonesia.
Method: A quantitative descriptive design was applied to 10 interns, who read a 1,098-word text from a grade XII Indonesian textbook and answered 10 comprehension (C2) questions. Reading speed in words per minute (KPM), comprehension, effective reading ability and the speed–comprehension correlation were calculated.
Results: The mean reading speed was 173.54 KPM, and only one student (10%) reached the 250-KPM standard of the Education Unit Level Curriculum (KTSP). Mean comprehension was 55%, with three students (30%) reaching the adequate criterion of 70%. The mean effective reading ability was 94.50 KPM, and reading speed was not positively correlated with comprehension ($r = -0.13$, $p = 0.72$).
Conclusion: The reading speed and comprehension of the interns were generally below the expected standards. Reading programs that develop speed and comprehension simultaneously are recommended, while their relevance to digital literacy requires further study using a direct measure.

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INTRODUCTION

The development of digital technology has changed the way people access, process, and utilize information, thus demanding reading skills that are not only fast but also effective in improving digital literacy (Anderson & Rainie, 2018; Carr, 2020). Digital literacy, which includes the ability to understand, assess, and use information critically, is a basic competency in today's information era, especially in facing the challenges of information overload and fake news flows (Diepeveen & Pinet, 2022; Spengler, 2015). In Indonesia, people's digital literacy is still relatively low, with the digital literacy rate at a "moderate" level, according to the Ministry of Communication and Information Technology (Hasanah et al., 2024). This shows the need for new approaches and strategies to improve the ability to read quickly and effectively among the public.

Recent national data confirm this condition. The 2021 Indonesian Digital Literacy Index, measured across the pillars of digital skills, digital ethics, digital safety and digital culture, reached only 3.49 on a five-point scale, which is classified as moderate (Kementerian Komunikasi dan Informatika & Katadata Insight Center, 2022). Foundational reading proficiency is also a concern: in PISA 2022, Indonesian 15-year-olds obtained a mean reading score of 359, far below the OECD average, and only about one quarter of them reached the minimum proficiency level (Level 2) in reading (OECD, 2023). Because the ability to locate, understand and evaluate digital information depends on foundational reading skills, these figures indicate that strengthening reading speed and comprehension remains a relevant agenda for Indonesian education.

The urgency of this research lies in the need to improve digital literacy as an important competency in daily life, especially in a digital-based work environment (Reddy et al., 2023; Tinmaz et al., 2022). In a global context, effective reading speed has been recognized as an important factor that can help individuals filter and analyze information more quickly and efficiently (Jayes et al., 2022; Kozyreva et al., 2023). Various studies show that individuals with high reading speeds tend to be more competent in processing digital information, thus having a higher competitiveness in the digital economy (Altamura et al., 2025; Sarimanah et al., 2022). At the national level, the development of programs that support the improvement of reading speed is still limited, even though this is crucial to improving people's literacy skills (Gildore et al., 2025; Marmoah et al., 2022; Wijaya et al., 2025).

Conceptually, reading speed is usually expressed as the number of words read per minute, whereas reading comprehension refers to the proportion of the text content that is correctly understood. A meta-analysis of 190 studies estimated that adults silently read English non-fiction at an average of about 238 words per minute and fiction at about 260 words per minute, with lower rates among younger and second-language readers (Brysbaert, 2019). Speed alone, however, is not a sufficient indicator of reading quality. A comprehensive review of reading research showed that there is a trade-off between speed and accuracy, so that large increases in speed are generally accompanied by reduced comprehension (Rayner et al., 2016).

For this reason, reading instruction in Indonesia commonly uses the notion of effective reading ability, which combines reading speed and comprehension into a single indicator (Sihombing, 2023). As a theoretical support, the table below shows the results of a survey on effective reading speed and digital literacy levels in several countries, including Indonesia. This data shows that countries with higher reading speeds tend to have better digital literacy, which is measured by the ability to critically understand and verify digital information (Chen & Xiao, 2024; Hu & Hu, 2024).

Previous research indicates that reading speed plays an important role in improving digital literacy, especially in the context of education (Aroo & Nimehchisalem, 2023; Klimovich et al., 2023; Özkara et al., 2025). For example, research by Klimovich et al., (2023) shows that speed-reading training can increase readers' reading speed without reducing their comprehension, although the gains are smaller than those claimed by commercial programmes. Meanwhile, Aroo & Nimehchisalem, (2023) examined the effect of a speed reading course on the reading comprehension of learners with impulsive and reflective cognitive styles. However,

this study has not explored the effectiveness of reading speed in the context of digital literacy in Indonesia.

In the Indonesian context, studies on effective reading have mostly been conducted as classroom action research in general secondary schools. For example, Sihombing, (2023) found that grade XI students had a mean effective reading speed of only 85.54 words per minute before the intervention, and none of them reached the minimum criterion of 175 words per minute. Such studies, however, focus on classroom learning and rarely examine vocational students who are already exposed to the reading demands of the workplace.

There is a significant research gap in the existing literature, especially in the area of the effectiveness of reading speed in improving digital literacy in the Indonesian population (Prabowo et al., 2025). Although many studies have linked reading speed to reading comprehension ability, very few have discussed how reading speed can directly affect digital literacy skills, particularly in Indonesia's unique social and economic context (Meggiato et al., 2025; Psyridou et al., 2023). This creates opportunities to conduct more in-depth and relevant research.

In particular, vocational students undertaking industrial internships are required to read work instructions, reports and digital information independently, yet empirical data on their reading speed and comprehension in an industrial setting remain scarce. The novelty or novelty of this study is its focus on analyzing the effectiveness of reading speed as the main variable in improving digital literacy, which is expected to be a strategic recommendation for improving the digital competence of the Indonesian people (Audrin & Audrin, 2022).

With this approach, this research is expected to be able to make a significant contribution to the development of digital literacy policies based on strengthening basic reading skills (Kharismawati et al., 2024; Komariah et al., 2023). More specifically, the novelty of this study lies in providing baseline empirical data on the reading speed, reading comprehension and effective reading ability of vocational students during an industrial internship, measured against the KTSP benchmark, which has rarely been reported in previous Indonesian studies.

The purpose of this study is to identify and analyze how effectively reading speed can improve digital literacy in Indonesian society, as well as to explore the impact of increasing reading speed on the ability to understand and verify digital information (Ecker et al., 2022; Kozyreva et al., 2024; Wineburg et al., 2022). In addition, this study aims to provide practical recommendations for the development of reading speed-based digital literacy programs for the government and educational institutions (Simanjuntak et al., 2024).

Consistent with its descriptive design, this study operationally aims to: (1) describe the reading speed of vocational students interning at PT Syntax Corporation Indonesia; (2) describe their level of reading comprehension; (3) determine their effective reading ability; and (4) examine the relationship between reading speed and reading comprehension. Digital literacy was not measured directly in this study; it is treated as the broader context and as a direction for further research to which the findings on foundational reading skills are relevant.

METHOD

This study uses a quantitative descriptive approach to identify and explain the existing phenomena numerically. The quantitative descriptive method is a research approach that aims

to describe the characteristics of individuals or groups based on numerical data obtained from measurements or observations (Sugiyono, 2013). In this study, the phenomenon studied is the reading ability of vocational school students who are carrying out an internship program at PT. Syntax Corporation Indonesia.

Time and Place of Research

The research was carried out at the office of PT. Syntax Corporation Indonesia in September 2023. The selection of this place was carried out because the students who were the subjects of the research were undergoing an internship program at this company, so that data could be collected more easily and accurately.

Research Instruments

The instruments used in this study consist of text discourse and questions. The text discourse used comes from the XII grade Indonesian textbook, published by the Ministry of Education and Culture (Kemdikbud) 2018 edition with the title "Confusing Script," totaling 1098 words. This test instrument aims to measure the duration of reading and the level of students' comprehension of reading. To test comprehension, the test is given in the form of questions in the C2 category (comprehension), which is designed to assess the extent to which students understand the content of the discourse read. The comprehension test consisted of 10 questions at the C2 (comprehension) level, developed by the researchers based on the content of the text; each correct answer was scored 1, so the maximum score was 10 (100%). Empirical item validity and reliability testing was not conducted, and this is acknowledged as a limitation of the study.

Population and Sample

The population in this study includes all vocational school students who are carrying out internships at PT. Syntax Corporation Indonesia, with a total of no more than 30 students. Therefore, a saturated sampling technique is used, where all members of the population are used as research samples (Sugiyono, 2013). This technique was chosen because of the small Number of populations, so that the entire population can be used as a sample to obtain more representative results. The data analysed in this study were obtained from 10 students who completed both the reading speed test and the reading comprehension test.

Data Collection Techniques

Data collection was carried out through an effective reading ability test. The data collected includes two main aspects, namely the duration of student reading and the value of student comprehension of reading. The data collection process is carried out by the following procedure:

1. A student reading test is used to measure the time it takes for each student to read a text discourse. Reading time was recorded individually from the beginning to the end of reading and expressed in decimal minutes (e.g., 7.10 minutes) for the calculation of reading speed.
2. The distribution of questionnaires contains reading questions that aim to test students' understanding of the reading content after reading.

3. Reading content comprehension test, which is given to assess the extent to which students are able to understand reading correctly.

The test was administered with the permission of PT Syntax Corporation Indonesia and the students' schools, and the students were informed of the purpose of the test before participating. To protect confidentiality, the results are reported anonymously using student numbers.

Data Analysis Techniques

The data obtained was analyzed to determine the effective reading speed of students as well as their level of understanding of the reading content. Several formulas are used in this analysis:

1. Measuring Effective Reading Speed: Reading speed is calculated using the speed per minute (KPM) formula, by dividing the Number of words in the text by the reading time (in minutes):

$$\frac{number\ of\ words}{reading\ times\ (minutes)} = \text{number of KPM}$$

Where the number of words is 1,098 and the reading time is expressed in decimal minutes; thus, reading speed (KPM) = 1,098 ÷ reading time.

2. Measuring Reading Comprehension: The percentage of comprehension is calculated using the formula:

$$\frac{number\ of\ correct\ answers}{number\ of\ questions} \text{ X } 100$$

Where the number of questions is 10; thus, comprehension (%) = (number of correct answers ÷ 10) × 100.

The criteria for student comprehension are measured based on the following provisions:
   a. ≥ 70% = Adequate
   b. < 70% = Inadequate (Juneli et al., 2025)

3. Measuring Effective Reading Ability: Effective reading ability is calculated by multiplying reading speed by comprehension:

Effective Reading Ability = Reading Speed × Comprehension

Comprehension is entered as a proportion (e.g., 80% = 0.80), so that effective reading ability is also expressed in words per minute.

4. Measuring Average Effective Reading Ability: The average score of effective reading ability of all students is calculated using the following formula:

$$M = \frac{\sum X}{N}$$

in which
M = Average value
$\sum X$ = Number of students' reading speed
N = Number of samples (Juneli et al., 2025)

In this study, ∑X is the sum of the individual scores (reading speed, comprehension or effective reading ability) and N = 10.

5. Measuring the Relationship between Reading Speed and Comprehension: The relationship between the two variables was examined using Pearson product–moment and Spearman rank-order correlations at a significance level of 0.05. Given the small sample (n = 10), the coefficients are interpreted descriptively.

Assessment Criteria

The criteria for assessing students' reading ability are based on effective reading competency standards in accordance with *the Curriculum at the Education Unit Level* (KTSP) for elementary and secondary levels. The basic competency that class X students must have ineffective reading is 250 words per minute. The reading ability assessment is measured as follows: Although this benchmark is formulated for class X, it is used in this study as the minimum benchmark for upper-secondary students: vocational students undertaking internships are generally in grade XI or XII, and the reading text was taken from the grade XII textbook, so these students are expected to have at least attained the class X benchmark. In addition, an effective reading ability of 175 words per minute, i.e., 250 words per minute with 70% comprehension, is used as the combined benchmark (Sihombing, 2023).

a. < 250 words per minute → Inadequate
b. ≥ 250 words per minute → adequate/ sufficient

With these procedures and criteria, this study is expected to provide a clear picture of the effective reading ability of vocational school students interning at PT. Syntax Corporation Indonesia and its contribution to digital literacy. Because digital literacy was not measured directly, this contribution is discussed only as an implication for further research.

RESULTS AND DISCUSSION

Reading Speed of Vocational High School Students at PT. Syntax Corporation Indonesia

In this study, students' effective reading speed was calculated by dividing the Number of words in the text (1098 words) by the reading time spent by each student. Based on the results of the data obtained, the reading speed of students varied, with the lowest score being 109.8 words per minute and the highest reaching 258 words per minute. The average effective reading speed can be calculated to get a general idea of students' reading ability (Juneli et al., 2025; Sugiyono, 2013). The mean reading speed was 173.54 words per minute (SD = 45.14).

Table 1. Average Reading Speed of Students

Student	Reading Time (Minutes)	Reading Speed (KPM)
1	7.10	154.65
2	6.18	177.67
3	7.05	155.74
4	5.15	213.20
5	4.25	258.35
6	6.37	172.37
7	10.00	109.80
8	5.20	211.15
9	9.50	115.58
10	6.58	166.87

Source: Data processed

From the table 2, the majority of students have a reading speed below the standard set in KTSP, which is 250 words per minute. Only one student achieved adequate reading speed, while the other showed less than optimal results (Juneli et al., 2025; Sugiyono, 2013). Specifically, only student 5 (258.35 words per minute; 10%) met the 250-words-per-minute criterion, while the other nine students (90%) read between 109.80 and 213.20 words per minute. Two students (students 7 and 9) read at fewer than 120 words per minute, i.e., less than half of the KTSP benchmark.

Level of Students' Reading Comprehension

In addition to reading speed, reading comprehension is also measured through the Number of correct answers to questions related to reading texts. From the results of the study, the percentage of comprehension was calculated by dividing the Number of correct answers by the total questions, then multiplied by 100% (Juneli et al., 2025; Sugiyono, 2013).

Table 2. Student Reading Comprehension

Student	Correct Answer	Comprehension (%)
1	8	80%
2	4	40%
3	6	60%
4	4	40%
5	5	50%
6	4	40%
7	3	30%
8	7	70%
9	8	80%
10	6	60%

Source: Data processed

From table 3, only three students (students 1, 8 and 9; 30%) achieved an adequate level of comprehension (≥ 70%). Other students were under the criteria of adequate comprehension, showing difficulties in comprehending the reading even though they had completed texts with varying durations of time (Juneli et al., 2025; Sugiyono, 2013). The mean comprehension score

was 55% (SD = 17.80), ranging from 30% to 80%. Four students (40%) answered no more than four of the ten questions correctly, indicating that a considerable proportion of the interns grasped less than half of the information in a text taken from a grade XII textbook.

Correlation of Reading Speed and Reading Comprehension

To examine the relationship between reading speed and reading comprehension, Pearson product–moment and Spearman rank-order correlations were computed between the reading speed (Table 2) and the comprehension scores (Table 3) of the ten students. The results show a weak, negative and non-significant relationship (Pearson $r = -0.13$, $p = 0.72$; Spearman $\rho = -0.19$, $p = 0.60$). Thus, in this sample, students with higher reading speed did not tend to have better comprehension. For example, the fastest reader (student 5, 258.35 words per minute) answered only 50% of the questions correctly, whereas student 9, one of the slowest readers (115.58 words per minute), achieved 80%. Conversely, student 8 combined above-average speed (211.15 words per minute) with adequate comprehension (70%). This pattern indicates that reading speed does not always guarantee deep comprehension (Juneli et al., 2025; Sugiyono, 2013).

Discussion Based on Effective Reading Speed Standards

Based on the KTSP standard, effective reading ability is measured with a minimum speed target of 250 words per minute for the adequate category. From the data obtained, the average reading speed of students is still below this standard, indicating the need to improve students' speed reading skills. These results are in line with previous research that shows that speed reading training programs can improve students' reading speed and comprehension (Aroo & Nimehchisalem, 2023; Klimovich et al., 2023; Özkara et al., 2025).

The mean reading speed of 173.54 words per minute is also lower than the average silent reading rate of about 238 words per minute for adult readers of English non-fiction reported in the meta-analysis by (Brysbaert, 2019). This comparison should be interpreted with caution because the present text was written in Indonesian and the participants were adolescents, groups for which lower reading rates are generally expected. Nevertheless, the gap with both the KTSP benchmark and international norms indicates that the reading speed of the interns has not yet reached the level expected at the end of secondary education.

The findings are consistent with previous Indonesian studies. Sihombing (Sihombing, 2023) reported that grade XI senior high school students had a mean effective reading speed of 85.54 words per minute before the intervention, with no student reaching 175 words per minute; the mean effective reading ability of 94.50 words per minute found in this study is of a similar magnitude, and likewise no intern reached that benchmark. At the national level, the comprehension results (mean 55%, with only 30% of students reaching the adequate criterion) are in line with the PISA 2022 results, in which only about a quarter of Indonesian 15-year-olds attained the minimum level of reading proficiency (OECD, 2023). Taken together, these comparisons suggest that the low reading performance of the interns reflects a broader pattern in Indonesian secondary education rather than a characteristic specific to this group.

The absence of a positive relationship between speed and comprehension is also consistent with the speed–accuracy trade-off described by Rayner et al. (Rayner et al., 2016), who

concluded that reading faster than one's normal rate generally reduces comprehension and that speed-reading techniques do not overcome this limit. In this study, some students read quickly but understood little, while others read slowly but understood well. It should be emphasised that the present study did not test any training programme; the reference above to the effectiveness of speed reading training relies on previous research and cannot be confirmed by these data. The pattern observed, however, suggests that interventions focusing solely on increasing speed may be insufficient and that programmes should develop speed and comprehension simultaneously.

Implications of Research Results

The implication of this study is the importance of reading skill improvement programs for students, especially to support digital literacy in the current information era. An adequate reading speed is necessary to support students' ability to filter and analyze the information they receive on a daily basis, especially with the increasing amount of information available digitally (Anderson & Rainie, 2018; Carr, 2020). Reading literacy programs designed to improve both reading speed and reading comprehension will help students to be more effective in facing the challenges of digital literacy. Nevertheless, because digital literacy was not measured in this study, this implication should be regarded as a hypothesis to be tested in further research rather than as a direct finding.

Limitations of the Study

This study has several limitations. First, the sample was small (n = 10) and drawn from a single company, so the findings cannot be generalised to vocational students in general. Second, reading ability was measured with a single printed text and a 10-item comprehension test whose validity and reliability were not tested empirically. Third, digital literacy was not measured directly, so the relationship between reading ability and digital literacy could not be examined. Future studies are therefore recommended to involve larger samples, use several texts including digital texts, test the validity and reliability of the instruments, and include a direct measure of digital literacy.

CONCLUSION

This study concludes that the reading ability of vocational school students interning at PT Syntax Corporation Indonesia is generally below the standard set by the Education Unit Level Curriculum (KTSP). The mean reading speed was 173.54 words per minute, and only one of the ten students reached the 250-words-per-minute standard. Mean comprehension was 55%, with three students reaching the adequate criterion of 70%, and the mean effective reading ability was 94.50 words per minute. Reading speed was not positively related to comprehension ($r = -0.13$). These findings imply that reading programmes for vocational students should develop speed and comprehension simultaneously. The conclusions are limited by the small sample, a single printed text, untested instruments and the absence of a digital literacy measure, which should be addressed in future research.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the research, authorship, and publication of this article. The research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest. PT Syntax Corporation Indonesia, where the internship took place, had no role in the design of the study, the collection, analysis, and interpretation of the data, the writing of the manuscript, or the decision to publish the results.

AUTHOR'S CONTRIBUTION

Aisyah Nurjanah: conceptualization, methodology, data collection, formal analysis, and writing – original draft. Widia Ningsih: methodology, data curation, investigation, and writing – review and editing. Pegi Sugiartini: literature review, validation of the data analysis, and writing – review and editing. Upit Elya Rohimi: supervision, validation, and writing – review and editing. All authors read and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

GENERATIVE ARTIFICIAL INTELLIGENCE USAGE STATEMENT

The authors declare that generative artificial intelligence (AI) tools were used during the preparation of this manuscript. Generative AI tools, including Claude (Anthropic), were used to improve the clarity of the English language and the grammatical structure of the manuscript. Generative AI was not used to generate research data, perform the statistical analysis, or draw the conclusions of the study. All references suggested by the AI tools were checked by the authors against the original sources, and the entire content of the manuscript was carefully reviewed and edited by the authors, who take full responsibility for the accuracy, integrity, and originality of this article.

REFERENCES

Altamura, L., Vargas, C., & Salmerón, L. (2025). Do new forms of reading pay off? A meta-analysis on the relationship between leisure digital reading habits and text comprehension. *Review of Educational Research*, *95*(1), 53–88. https://doi.org/10.3102/00346543231216463

Anderson, J., & Rainie, L. (2018). *The future of well-being in a tech-saturated world*.

Aroo, G., & Nimehchisalem, V. (2023). The effect of a speed reading course on the reading comprehension of impulsive vs. reflective learners. *The Journal of AsiaTEFL*, *20*(3), 673–684. https://doi.org/10.18823/asiatefl.2023.20.3.11.673

Audrin, C., & Audrin, B. (2022). Key factors in digital literacy in learning and education: a

systematic literature review using text mining. *Education and Information Technologies*, *27*(6), 7395–7419. https://doi.org/10.1007/s10639-021-10832-5

Brysbaert, M. (2019). How many words do we read per minute? A review and meta-analysis of reading rate. *ElsevierM BrysbaertJournal of Memory and Language, 2019•Elsevier*, *109*. https://doi.org/10.1016/J.JML.2019.104047

Carr, N. G. . (2020). *The shallows : what the Internet is doing to our brains*. 294. https://books.google.com/books/about/The_Shallows.html?hl=id&id=-HuqDwAAQBAJ

Chen, X., & Xiao, Y. (2024). Pathways to digital reading literacy among secondary school students: A multilevel analysis using data from 31 economies. *Computers & Education*, *218*, 105090. https://doi.org/10.1016/j.compedu.2024.105090

Diepeveen, S., & Pinet, M. (2022). User perspectives on digital literacy as a response to misinformation. *Development Policy Review*, *40*(S2), e12671. https://doi.org/10.1111/dpr.12671

Ecker, U. K. H., Lewandowsky, S., Cook, J., Schmid, P., Fazio, L. K., Brashier, N., Kendeou, P., Vraga, E. K., & Amazeen, M. A. (2022). The psychological drivers of misinformation belief and its resistance to correction. *Nature Reviews Psychology*, *1*(1), 13–29. https://doi.org/10.1038/s44159-021-00006-y

Gildore, P. J. E., Aryanto, S., Suharjuddin, Denatara, E. T., & Awiria. (2025). Effective reading intervention strategies for primary grade students in Indonesia: A systematic review. *Cogent Education*, *12*(1), 2482470. https://doi.org/10.1080/2331186X.2025.2482470

Hasanah, U., Santoso, A., Pratiwi, Y., Sulthoni, & Farid, M. (2024). Exploring the correlation of self-perception on the use of digital literacy in learning. *International Journal of Evaluation and Research in Education*, *13*(6), 4354–4364. https://doi.org/10.11591/ijere.v13i6.27114

Hu, J., & Hu, J. (2024). The influence of age at first regular digital device access on digital reading performance: The mediating effect of cognitive flexibility. *Humanities and Social Sciences Communications*, *11*, 799. https://doi.org/10.1057/s41599-024-03292-y

Jayes, L. T., Fitzsimmons, G., Weal, M. J., Kaakinen, J. K., & Drieghe, D. (2022). The impact of hyperlinks, skim reading and perceived importance when reading on the Web. *PLOS ONE*, *17*(2), e0263669. https://doi.org/10.1371/journal.pone.0263669

Juneli, J. A., Hartati, T., Sopandi, W., & Sujana, A. (2025). Applying the preview, question, read, summarize, and test method to enhance the effective reading speed of elementary school students. *Mimbar Sekolah Dasar*, *12*(1), 94–112. https://doi.org/10.53400/mimbar-sd.v12i1.81938

Kementerian Komunikasi dan Informatika, & Katadata Insight Center. (2022). *Status literasi digital di Indonesia 2021*. Kementerian Komunikasi dan Informatika Republik Indonesia.

Kharismawati, L. R. S., Widodo, P., & Retnawati, H. (2024). Valid and reliable instrument for measuring Indonesian students' reading literacy. *Journal of Education and Learning (EduLearn)*, *18*(4), 1495–1504. https://doi.org/10.11591/edulearn.v18i4.21037

Klimovich, M., Tiffin-Richards, S. P., & Richter, T. (2023). Does speed-reading training work, and if so, why? Effects of speed-reading training and metacognitive training on reading speed, comprehension and eye movements. *Journal of Research in Reading*, *46*(2), 123–142. https://doi.org/10.1111/1467-9817.12417

Komariah, K., Suwandi, S., Slamet, S. Y., & Sumarwati. (2023). The implementation of post-Covid-19 pandemic school literacy in senior high schools. *International Journal of Instruction*, *16*(3), 377–394. https://doi.org/10.29333/iji.2023.16321a

Kozyreva, A., Lorenz-Spreen, P., Herzog, S. M., Ecker, U. K. H., Lewandowsky, S., Hertwig, R., Ali, A., Bak-Coleman, J., Barzilai, S., Basol, M., Berinsky, A. J., Betsch, C., Cook, J., Fazio, L. K., Geers, M., Guess, A. M., Huang, H., Larreguy, H., Maertens, R., … Wineburg, S. (2024). Toolbox of individual-level interventions against online misinformation. *Nature Human Behaviour*, *8*(6), 1044–1052. https://doi.org/10.1038/s41562-024-01881-0

Kozyreva, A., Wineburg, S., Lewandowsky, S., & Hertwig, R. (2023). Critical ignoring as a core competence for digital citizens. *Current Directions in Psychological Science*, *32*(1), 81–88. https://doi.org/10.1177/09637214221121570

Marmoah, S., Poerwanti, J. I. S., & Suharno. (2022). Literacy culture management of elementary school in Indonesia. *Heliyon*, *8*(4), e09315. https://doi.org/10.1016/j.heliyon.2022.e09315

Meggiato, A. O., Corso, H. V., & Corso, L. V. (2025). Reading fluency and its relationship with comprehension: A systematic literature review. *Paidéia (Ribeirão Preto)*, *35*, e3510. https://doi.org/10.1590/1982-4327e3510

OECD. (2023). *PISA 2022 results (Volume I): The state of learning and equity in education*. OECD Publishing. https://doi.org/10.1787/53f23881-en

Özkara, Y., Mergen Gürses, S., & Bilişli, Y. (2025). The effect of speed reading technique on second-grade students' reading comprehension levels. *SAGE Open*, *15*(3). https://doi.org/10.1177/21582440251375366

Prabowo, T. T., Marwiyah, Zain, L., Martias, L. D., Riani, N., Farhanah, N., & Sitthiworachart, J. (2025). Effect of demographic factors on reading habits: Study on Indonesian secondary school students. *Journals.Sagepub.ComTT Prabowo, Marwiyah, L Zain, LD Martias, N Riani, N Farhanah, J SitthiworachartJournal of Librarianship and Information Science, 2025•journals.Sagepub.Com*, *57*(3), 705–718. https://doi.org/10.1177/09610006241239078

Psyridou, M., Tolvanen, A., Niemi, P., Lerkkanen, M.-K., Poikkeus, A.-M., & Torppa, M. (2023). Development of silent reading fluency and reading comprehension across grades 1 to 9: Unidirectional or bidirectional effects between the two skills? *Reading and Writing*, *36*(8), 1969–1996. https://doi.org/10.1007/s11145-022-10371-6

Rayner, K., Schotter, E. R., Masson, M. E. J., Potter, M. C., & Treiman, R. (2016). So much to read, so little time: How do we read, and can speed reading help? *Journals.Sagepub.ComK Rayner, ER Schotter, MEJ Masson, MC Potter, R TreimanPsychological Science in the Public Interest, 2016•journals.Sagepub.Com*, *17*(1), 4–34. https://doi.org/10.1177/1529100615623267

Reddy, P., Chaudhary, K., & Hussein, S. (2023). A digital literacy model to narrow the digital literacy skills gap. *Heliyon*, *9*(4), e14878. https://doi.org/10.1016/j.heliyon.2023.e14878

Sarimanah, E., Soeharto, S., Dewi, F. I., & Efendi, R. (2022). Investigating the relationship between students' reading performance, attitudes toward ICT, and economic ability. *Heliyon*, *8*(6), e09794. https://doi.org/10.1016/j.heliyon.2022.e09794

Sihombing, N. A. (2023). Peningkatan kecepatan efektif membaca siswa dengan menggunakan metode klos. *GERAM (Gerakan Aktif Menulis)*, *11*(1), 18–29. https://doi.org/10.25299/geram.2023.11971

Simanjuntak, E., Mulya, H. C., Engry, A., & Alfian, I. N. (2024). Dataset of digital literacy of university students in Indonesia. *Data in Brief*, *58*, 111227. https://doi.org/10.1016/j.dib.2024.111227

Spengler, S. S. (2015). Educators' perceptions of a 21st century digital literacy framework. *Walden University*.

Sugiyono. (2013). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Alfabeta.

Tinmaz, H., Lee, Y.-T., Fanea-Ivanovici, M., & Baber, H. (2022). A systematic review on digital literacy. *Smart Learning Environments*, *9*(1), 21. https://doi.org/10.1186/s40561-022-00204-y

Wijaya, A. W. A., Siantoro, A., Triwibowo, H., Asih, R. A., Sambo, M. S., & Layuk, M. (2025). Literacy improvement for remote primary school students in Papua, Indonesia: The Wahana Literasi program. *Issues in Educational Research*, *35*(1), 395–421.

Wineburg, S., Breakstone, J., McGrew, S., Smith, M. D., & Ortega, T. (2022). Lateral reading on the open Internet: A district-wide field study in high school government classes. *Journal of Educational Psychology*, *114*(5), 893–909. https://doi.org/10.1037/edu0000740