International Journal of Multidisciplinary Research and Publications
ISSN (Online): 2581-6187

Profile of Academic Abilities of Elementary, Middle, and High School Students Based on Academic Ability Test Results

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Abstract*—The 2025 Academic Ability Test in Indonesia, also known as Tes Kompetensi Akademik (TKA), serves as a national instrument to map the reading literacy, numeracy literacy, and reasoning profiles of students in elementary school (SD), junior high school (SMP), and senior high school (SMA) in Indonesia. This study aims to describe the academic ability profiles of elementary, middle, and high school students in Kendari City, Southeast Sulawesi, based on the 2025 TKA results, as well as to identify the factors influencing these achievements. The research method employed a descriptive quantitative approach using a survey design. The sample was selected using stratified random sampling, comprising 1,240 students: 420 elementary school students, 410 junior high school students, and 410 senior high school students from 18 public and private schools across 10 subdistricts in Kendari City. The 2025 TKA instrument was analyzed using the Rasch model and presented on a scale of 0–1,000. The results show that the average reading literacy score in Kendari City was 498.53, slightly below the national average of 501.2. Numeracy literacy stood at 483.71, still at the "Insufficient" level. Scores by educational level were as follows: elementary school (SD) 472, junior high school (SMP) 495, and senior high school (SMA) 521. High school students excel in quantitative reasoning, while elementary school students remain weak in text inference. Significant factors include parents' socioeconomic status, the duration of effective post-pandemic learning, and the availability of certified numeracy literacy teachers. The discussion emphasizes the importance of data-driven interventions at the elementary school level and the strengthening of a culture of literacy outside of school hours. The conclusion of this study is that the academic abilities of students in Kendari show an upward trend compared to the 2023 Minimum Competency Assessment (AKM), but the gaps between grade levels and between schools remain wide. Recommendations are directed at the Kendari City Education Office, the Subject Teachers' Working Group (MGMP), and schools to implement differentiated instruction and teacher training based on TKA results*.

***Keywords*—** *Academic Ability Test, reading literacy, numeracy literacy*.

I. INTRODUCTION

The quality of education in Indonesia following the COVID-19 pandemic remains a major challenge for the government. The transition from the National Examination to the National Assessment through the Academic Ability Test (TKA) component in 2025 represents an effort by the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) to assess students' cognitive abilities more comprehensively (Kemendikbudristek, 2023). However, the reality is that the 2023 National Assessment results show that 50% of Indonesian students have not yet reached the minimum proficiency level in literacy and numeracy (Pusmendik, 2024). This phenomenon indicates a mismatch between educational outcomes and the objectives of the Merdeka Belajar Curriculum, which emphasizes strengthening literacy and numeracy as the foundation of learning.

This phenomenon is also evident in Kendari City. Of the 23,540 elementary (SD), middle (SMP), and high school (SMA) students recorded in the Kendari City Education Office's Basic Education Data (2024), many schools have not yet used TKA results to design remedial learning programs. Teachers tend to focus on completing the curriculum without analyzing the profiles of students' abilities already available from assessment results. Theoretically, students' low academic abilities can be understood through several frameworks. Bruner (1960) emphasized that effective learning occurs when students progress gradually through the enactive, iconic, and symbolic stages. If elementary school students are immediately presented with symbolic TKA problems without adequate scaffolding, low scores are a logical consequence. Similarly, Vygotsky (1978), through the concept of the Zone of Proximal Development, states that students' cognitive development will be optimal if they receive guidance from someone more capable—in this case, the teacher.

Meanwhile, Hattie (2009), in a meta-analysis of 800 studies, found that the quality of teaching and teacher feedback have the greatest influence on learning outcomes, with an effect size of 0.75, surpassing the influence of physical school facilities. Bandura (1997) adds that teachers' self-efficacy also plays a crucial role, as teachers who are confident in teaching mathematics tend to produce students with higher self-efficacy and numeracy scores. Field data from Kendari City supports these theoretical assumptions. According to the 2023 National Assessment Results Report for Southeast Sulawesi Province, the average student score in Kendari City was 487.13, placing it 7th out of 17 regencies/cities in Southeast Sulawesi (Pusmendik, 2024). The numeracy literacy domain is the primary weak point, with 63% of elementary school students unable to solve problems involving numbers and geometry. Initial observations at several public junior high schools indicate that effective

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learning time is only 4.2 hours per day, lower than the 5-hour standard. The ratio of reading books per student is also still 1:3, far from UNESCO's 1:1 recommendation.

Data from the Kendari City Department of Education (Disdik) for 2024 shows that only 38% of teachers have completed in-service Teacher Professional Education (PPG), even though preliminary analysis indicates that classes taught by teachers who have completed PPG have an average score that is 22 points higher. These facts indicate that teacher quality and the availability of learning resources are critical issues in Kendari. Several previous studies have examined the implementation and impact of the National Assessment. Wardhani and Siregar (2022) found that teachers in Central Java struggled to interpret National Assessment data to improve instruction due to limited data literacy. Rahim, Syamsir, and Qodirun (2023) in Makassar mapped the reading literacy profiles of junior high school students and found a 31-point gap between private schools in the city center and public schools in the city outskirts. At the international level, the OECD (2023), through PISA 2022, confirmed that socioeconomic status accounts for 14% of score variation, while teacher quality accounts for 31%. Masters' (2013) study on Australia's NAPLAN demonstrated that the Rasch model is effective for measuring student proficiency consistently across grade levels. However, most of these studies have focused on the Java-Sumatra region and other major cities, while post-pandemic mapping of the 2025 TKA in developing cities like Kendari remains limited.

Based on this discussion, a research gap is clearly evident. First, there has been no study that comprehensively maps the academic ability profiles of students in Kendari City based on 2025 TKA results by educational level (elementary, junior high, and senior high school) and by domain (reading literacy, numeracy, and general reasoning). Data from the Center for Educational Assessment (Pusmendik) currently only extends to the provincial level. Second, previous studies have not linked students' TKA scores in Kendari to local contextual variables—such as the ratio of books per student, effective learning hours, and teachers' Professional Teacher Education (PPG) certification status—using regression analysis. Third, the policy recommendations issued by the Kendari City Education Office (Disdik) have so far remained generic because they have not been based on granular TKA data. Still, Fullan (2016) highlights that educational change will only be successful if it is founded on sound, factual evidence.

For this reason, this study is both important and urgent. The 2025 TKA is a new instrument implemented following the pandemic; therefore, mapping the academic ability profiles of Kendari students is imperative so that the Education Office and educational institutions do not lose their direction in designing intervention programs for 2025–2026. Without accurate profile data, programs to strengthen teachers, increase the number of textbooks, or extend learning hours risk missing their mark. As the capital of Southeast Sulawesi Province, Kendari should serve as a role model in the utilization of assessment data. If the 63% numeracy gap in elementary schools is not addressed immediately, the impact will ripple through to the junior high and high school levels and reduce the competitiveness of Kendari graduates at the national level. Therefore, this study is expected to fill the data gap, test the relevance of the Bruner-Vygotsky-Hattie theory in the local context, and produce evidence-based policy recommendations for the Kendari City Education Office.

II. METHODOLOGY

This study employs a descriptive quantitative approach with a cross-sectional survey design. According to Sugiyono (2024), descriptive quantitative research aims to describe or depict the state of the research subject systematically, factually, and accurately based on numerical data. A cross-sectional design was chosen because data were collected at a specific point in time without manipulating variables, making it suitable for mapping the profile of students' academic abilities on the 2025 TKA (Creswell & Creswell, 2018). The population in this study consists of all 5th-grade elementary school (SD), 8th-grade junior high school (SMP), and 11th-grade senior high school (SMA) students in Kendari City for the 2024/2025 academic year, totaling 23,540 students based on the 2024 Basic Education Data from the Kendari City Education Office.

The sampling technique used was stratified random sampling, with strata based on grade level and school status (public or private). According to Fraenkel, Wallen, and Hyun (2019), stratified random sampling is appropriate when the population is heterogeneous and the researcher wishes to ensure the representation of each stratum. The final sample consisted of 1,240 students, comprising 420 elementary school (SD) students, 410 junior high school (SMP) students, and 410 senior high school (SMA) students from 18 schools spread across 10 subdistricts in Kendari City. This sample size meets the criteria set by Isaac and Michael, who state that a minimum of 5% of the population is required for large populations (Sugiyono, 2024).

The primary research instrument was the 2025 Academic Ability Test (TKA) developed by the Education Assessment Center of the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek). The instrument consists of three domains: reading literacy (45 items), numeracy literacy (40 items), and general reasoning (30 items) (Kemendikbudristek, 2023). Raw scores were converted to a 0–1000 scale using a one-parameter Rasch model, which, according to Masters (2013), is capable of producing interval measurements that are equivalent across items and across students. Achievement categories are defined as follows: Very Low <455, Low 455–484, Adequate 485–514, Competent 515–544, and Proficient ≥545 (Pusmendik, 2024). Data collection was conducted in February–March 2025 via a semi-online mode in the school's computer lab. Contextual variables were gathered through a teacher questionnaire adapted from the AKM instrument and validated by experts with an Aiken's V coefficient of 0.89 (Azwar, 2019). The questionnaire's reliability was tested using Cronbach's Alpha, yielding a value of 0.87, which falls into the "highly reliable" category (Sugiyono, 2024). Data analysis was performed using SPSS version 26.

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Descriptive statistics were used to describe the mean, standard deviation, and percentage of achievement per domain. One-way ANOVA was used to test differences in scores across grade levels, while multiple linear regression was used to examine the influence of contextual variables—such as effective learning hours, textbook-to-student ratio, and teacher training—on TKA scores (Field, 2018). The construct validity of the TKA instrument was tested by Pusmendik with a Cronbach's alpha reliability of 0.92 (Ministry of Education, Culture, Research, and Technology, 2023). Research ethics were addressed through a research permit from the Kendari City Education Office No. 420/152/Disdik, written parental consent, and the anonymization of student identities in accordance with the principles of educational research ethics (Creswell & Creswell, 2018). Limitations of this method include the potential for social bias in self-reported data from teachers and the fact that a cross-sectional design cannot establish long-term causal relationships (Fraenkel et al., 2019).

III. Results And Discussion

The average composite score for the academic abilities of students in Kendari City on the 2025 TKA was 498.53. The breakdown is as follows: Reading Literacy 503.2, Numeracy Literacy 483.7, and General Reasoning 508.6. Compared to the national average of 501.2, the scores of students in Kendari City were still 2.67 points lower. However, when compared to the 2023 AKM results of 487.13, there was an increase of 11.4 points (Pusmendik, 2024). This increase demonstrates the positive impact of the post-COVID-19 pandemic learning transition program emphasized by the Ministry of Education, Culture, Research, and Technology (2023). By educational level, the score profiles show a clear gap: elementary school (SD) at 472, junior high school (SMP) at 495, and senior high school (SMA) at 521. The gap between elementary and senior high school is 49 points, which is smaller than the national gap of 56 points (OECD, 2023). This indicates that achievement equity across educational levels in Kendari is relatively better. However, 63% of elementary school students are still at the "Insufficient" level in the numeracy domain, particularly in the subdomains of numbers and geometry. This finding is consistent with the 2019 TIMSS results, which reported that Southeast Asian students struggle with spatial geometry and data reasoning (Mullis et al., 2020).

Table 1 shows spatial disparities in the academic abilities of students in Kendari City. The subdistricts of West Kendari and Puuwatu, which have better access to educational facilities and a higher book-to-student ratio, achieved the "Competent" category. In contrast, Nambo and Abeli, located on the city's outskirts, remain in the "Insufficient" category for numeracy. These findings support Vygotsky's (1978) theory that the social context and the availability of teacher scaffolding have a significant impact on student achievement. Subdistrict-level data-driven affirmative action initiatives must be implemented by the Kendari City Education Office immediately due to this difference.

The gap between subdistricts is 46.6 points, with West Kendari scoring 521.4 and Nambo scoring 474.8. This gap is statistically significant ($p<0.01$) and aligns with the 2023 OECD findings on the influence of socioeconomic status. Numeracy skills are weak across all subdistricts: Even in West Kendari, the subdistrict with the highest scores, the numeracy score of 509.3 remains below the reading score of 528.1. Nambo has the lowest score at 458.2. Meanwhile, in terms of General Reasoning skills, all subdistricts scored above the composite average. Thus, this could be a strength for Kendari students. Based on these results, three clusters can be identified: the top cluster consists of West Kendari and Puuwatu; the middle cluster ranges from Wua-Wua to Kambu; and the bottom cluster consists of Abeli and Nambo.

TABLE 1. Profile of 2025 TKA Scores for Elementary through High School Students in Kendari City by Subdistrict

Subdistrict	Composite Average	Reading Literacy	Numeracy	General Reasoning	Category
West Kendari	521.4	528.1	509.3	527	Proficient
Puuwatu	516.8	522.5	502.9	525	Proficient
Wua-Wua	507.2	512	494.5	515.1	Proficient
Mandonga	501.6	506.3	487.2	511.3	Proficient
Baruga	498.9	503.7	484.1	508.9	Adequate
Kadia	496.3	500.8	481.5	506.6	Adequate
Poasia	492.7	497.2	477.3	503.6	Adequate
Kambu	488.5	493	472.8	499.7	Adequate
Abeli	481.2	485.6	465	492.9	Adequate
Nambo	474.8	479.1	458.2	487.1	Low
Kendari City	498.5	503.2	483.7	508.6	Adequate

Source: Processed TKA 2025 Data from the Ministry of Education, Culture, Research, and Technology, 2025

High school students in Kendari City achieved a score of 528 points and fell into the "Proficient" category. Their strengths lie in their ability to interpret information and evaluate texts. Their main weakness lies in their ability to integrate information across texts. In contrast, elementary school students were weakest on the "finding explicit information" indicator, with an average of 448. This situation indicates a lack of practice in reading aloud and guided reading in lower grades. Theoretically, these findings can be explained through Bruner's (1960) theory of cognitive development. Bruner emphasizes that elementary school-aged students are still in the enactive and iconic stages before entering the symbolic stage. If teachers directly teach symbolic texts without concrete media, students' literal comprehension will be hindered. Research by Rahim, Syamsir, and Qodirun (2023) in Makassar also found a similar pattern: schools that implemented picture-based early literacy and concrete media had literacy scores 31 points higher than schools that moved directly to text. The 31-point difference in scores between private schools in West Kendari and public schools in outlying areas also indicates the influence of socioeconomic status. According to the OECD (2023), family economic status accounts for 14% of the variation in PISA scores, so it is not surprising that a similar gap appears in the Kendari City TKA.

The numeracy domain was the weakest across all grade levels, with an average score of 483.7. Junior high school students lagged the most, with a score of 469 points. An

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analysis of the test items showed that 72% of students answered the "reasoning about uncertainty and data" question incorrectly. Yet, the context of Kendari City is rich in real-world data; examples include fish prices at Pasar Baru, rainfall data from the BMKG Wolter Monginsidi Station, and tourism data for Nambo Beach. These findings indicate that teachers have not yet made extensive use of local contexts as sources for math problems. This contradicts the principle of Contextual Teaching and Learning proposed by Johnson (2002), which states that learning is meaningful when linked to students' real-world situations. Wardhani and Siregar (2022) also emphasize that TKA numeracy questions are indeed context-based; therefore, teachers who do not train students to solve contextual problems will face difficulties. The regression results show that the variables "effective learning hours" and "teachers who completed the 40 JP numeracy training" have a significant effect ($p < 0.01$) on students' numeracy scores. These findings support Bandura's (1997) Self-Efficacy Theory, which states that teachers with high self-efficacy in teaching mathematics tend to use more varied teaching strategies and provide constructive feedback, ultimately leading to an increase in students' self-efficacy. Boaler (2016), in her book *Mathematical Mindsets*, also emphasizes that teachers' mindsets toward mathematics are contagious to students. Teachers who believe that "math is only for smart kids" will create classrooms with high levels of math anxiety; conversely, teachers with a growth mindset will foster students who are brave enough to try.

The general reasoning domain recorded the highest score at 508.6. High school students excelled in quantitative reasoning with a score of 531. However, elementary school students were weak in verbal reasoning involving analogies. This gap indicates that a culture of discussion, questioning, and debate in the classroom remains limited. These findings align with Hattie's (2009) meta-analysis, which ranks "feedback" and "culture of questioning" among the top 10 learning strategies, with effect sizes of 0.75 and 0.82, respectively. Hattie states that teachers who routinely provide specific feedback and encourage students to ask questions will significantly improve learning outcomes. In Kendari, initial observations indicate that teachers still rely heavily on lecturing and allocate minimal time for students to ask questions.

ANOVA results show a significant difference in scores between subdistricts ($p=0.003$). The West Kendari and Puuwatu subdistricts performed best, while Abeli and Nambo lagged. Regression analysis identified the three strongest predictors: 1) The ratio of reading books per student had an r value of 0.41, 2) Teachers who had completed in-service professional development (PPG) had an r value of 0.38, and 3) Effective learning time exceeding 5 hours per day had an r value of 0.35. Whether a school was private or public was not significant when socioeconomic variables were controlled for. This is consistent with the findings of PISA 2022 (OECD, 2023). Theoretically, the role of teachers and the school context can be explained through Vygotsky's (1978) concept of the Zone of Proximal Development (ZPD). Vygotsky stated that students' cognitive development occurs optimally when there is scaffolding from a more capable person—in this case, the teacher. Elementary school students in Kendari City who struggle with numeracy are not "unable" to learn; rather, they are in a zone that requires more intensive scaffolding in the form of concrete materials, local contexts, and step-by-step guidance from teachers. Fullan (2016) emphasizes that educational change is only effective if it is based on data. Therefore, schools must use the results of this TKA as a guide to design targeted interventions, rather than generic programs.

IV. Conclusion

Three key findings from the 2025 TKA study in Kendari City. First, the composite score of 498.53 is slightly below the national average, an increase of 11.4 points compared to the 2023 AKM. Second, the score gaps are 472 for elementary school, 495 for junior high school, and 521 for senior high school. Numeracy is the weakest domain across all levels, while general reasoning is the strongest at the senior high school level. Third, the strongest factors are: effective learning hours, textbook-to-student ratio, and numeracy teacher training. School status (private or public) is not a significant factor when controlling for socioeconomic status. The academic abilities of elementary, middle, and high school students in Kendari City show a positive trend, but disparities between schools and educational levels require intervention. Thus, the " " context, teachers, and literacy culture are the three pillars of quality. Without TKA data as a benchmark, generic strengthening programs fail to address the root causes of low-performing classes. Education agencies and schools must use TKA as the foundation for evidence-based planning.

V. Recommendations

The Kendari City Department of Education can launch the "Kendari Numeracy Proficiency" program, focusing on 3rd through 5th graders in elementary school. The budget includes reading materials at a 1:1 ratio per student and 40 JP of certified numeracy teacher training. A public dashboard displaying TKA data by school. Principals and subject-specific teacher working groups (MGMP) can implement differentiated instruction. At the elementary school level, reading corners can be established with a daily reading-aloud session lasting > 15 minutes. At the junior high school level, local data can be integrated into numeracy problems. Additionally, monthly teacher lesson studies are recommended. Teachers can shift their role from "lecturer" to facilitator. They can use a scientific approach combined with Contextual Teaching and Learning (CTL) that incorporates the market, the port, and Tolaki culture into instruction. Provide specific feedback rather than simply "right/wrong." For further research, a 3-year longitudinal study on the effects of the intervention can be conducted. Conduct a qualitative study on "students' perspectives" regarding the causes of numeracy difficulties.

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