



# The Cognitive Diagnostic Assessment in Learning to Write Personal Letters in Elementary School

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Received: 2024-09-06 Accepted:2024-09-23

DOI: 10.2456/ideas.v12i2.5569

## Abstract

A cognitive diagnostic assessment is a process of gathering information to identify students' strengths and weaknesses in cognitive aspects. In the context of teaching personal letter writing in elementary school, a cognitive diagnostic assessment can help teachers understand students' initial comprehension of the structure and elements of personal letters. The purpose of this research is to determine students' abilities in critical thinking, reasoning, and problem-solving, as well as to assess their readiness for learning. This research employs a qualitative approach with a case study method to explore how teachers implement, evaluate, and assess the outcomes of cognitive diagnostic assessments in teaching personal letter writing at SD Batanghari. The study reveals that cognitive diagnostic assessments can assist teachers in achieving the desired learning objectives and enhance teachers' insights regarding diagnostic assessments. The findings also indicate that cognitive diagnostic assessments can be used to map students' learning needs based on their learning styles, interests, and skills. Cognitive diagnostic assessments in teaching personal letter writing in elementary school play a crucial role in ensuring that students can complete tasks well and achieve the expected learning goals. Thus, this research contributes to the development of cognitive assessments that are aligned with the core material and can improve students' problem-solving abilities in elementary school.

**Keywords:** *Cognitive Diagnostic Assessment, Independent Curriculum, Personal Letter*

## **Introduction**

In the context of elementary education, cognitive diagnostic assessment plays a crucial role in identifying students' abilities in writing personal letters. This assessment helps educators understand students' literacy skills while providing insights to tailor teaching approaches (Huda, 2024). Cognitive diagnostic assessment not only evaluates cognitive abilities but also reveals students' strengths and weaknesses, which is highly beneficial for designing appropriate learning strategies (Watu, 2024).

Specifically, cognitive diagnostic assessment in personal letter writing instruction remains underexplored in educational literature. Most research focuses on subjects like science and social studies, which frequently use this assessment to evaluate students' cognitive understanding (Ermiyanto et al., 2023). The lack of research in the field of personal letter writing may be justified by the perception that this skill is more practical than cognitive. However, writing personal letters involves understanding structure, proper language use, and the ability to articulate ideas clearly—elements that require in-depth cognitive measurement.

This research aims to address this gap by exploring the use of cognitive diagnostic assessment in teaching personal letter writing. Through this assessment, educators can diagnose students' comprehension levels of key components in personal letter writing, such as purpose, structure, language conventions, and effectiveness in conveying ideas. Therefore, this research is expected to make a practical contribution to improving the quality of writing instruction in elementary schools and offer new insights into educational assessment theory.

While previous studies have demonstrated the importance of diagnostic assessment in personalized teaching (Azis, 2023; Nugroho, 2023), this research emphasizes that the application of such assessments is also relevant for evaluating students' writing skills. By diagnosing students' initial skills, educators can more effectively adjust their teaching methods and design interventions tailored to individual proficiency levels.

In addition to cognitive aspects, non-cognitive diagnostic assessment also plays a role in providing a holistic view of students (Rahman, 2023), particularly within the Merdeka curriculum framework, which emphasizes a student-centered learning approach. Integrating this assessment into personal letter writing instruction allows teachers to identify learning preferences, emotional readiness,

and students' varying learning styles, making teaching more inclusive (Putro et al., 2023).

Through the stages of preparation, implementation, and evaluation of diagnostic assessment, teachers can systematically monitor students' progress. These stages are important for identifying gaps in students' understanding and providing timely support (Suarni, 2023). Additionally, applying this assessment can help teachers more effectively measure students' critical thinking and language proficiency (Zhao et al., 2023).

The challenges in implementing diagnostic assessments primarily lie in teachers' readiness and the tools used. It is essential to provide continuous professional development and training for educators so that they can effectively use assessment results to design better learning experiences. In an increasingly digitized learning environment post-pandemic, cognitive diagnostic assessments have become even more critical in identifying learning gaps and developing relevant teaching strategies.

This research is expected not only to provide practical contributions to teaching but also to strengthen the theoretical foundation related to cognitive assessment in literacy. Thus, the findings of this study are hoped to assist teachers in designing more inclusive and effective teaching approaches for personal letter writing instruction.

## **Method**

This research adopts a qualitative approach by collecting descriptive data in the form of words, writings, and observed behaviors. The primary focus of this study is an Indonesian language teacher at a junior high school in Jambi. This case study approach is essential to examine specific or unique aspects of the research subject, namely the Indonesian language teacher who serves as the main informant. The research procedure consists of three main stages: preparation, implementation, and evaluation. In the preparation stage, the researcher identifies the research subject, which is an Indonesian language teacher at a junior high school, and develops the cognitive diagnostic assessment instruments to be used. In the implementation stage, training is conducted for teachers on how to use the developed assessment tools, followed by an initial assessment that analyzes students' writings to identify their strengths and weaknesses.

This allows the teacher to design tailored learning strategies and provide constructive feedback to improve students' writing skills. In the evaluation stage, the process is carried out by comparing the results of the initial assessment with students' progress during the learning process. Data collection techniques include interviews and documentation. Interviews are chosen as the primary technique to explore in-depth insights into the teacher's understanding of cognitive diagnostic assessment and its application in writing instruction. Interviews allow the researcher to ask open-ended questions, providing space for the teacher to share experiences and views in detail. Additionally, documentation is used to gather information from written records, such as lesson plans and samples of student writings. The selection of research participants considers relevance and data validity criteria, with characteristics including teaching experience, educational qualifications, and involvement in curriculum development for teachers, as well as writing ability levels and educational backgrounds for students. With this approach, the research is expected to provide comprehensive and focused insights into the application of cognitive diagnostic assessment in teaching the Indonesian language in a local context, as well as implications for improving students' writing skills.

## **Results**

The process of conducting diagnostic assessment in an educational setting, particularly in the context of assessing students' writing skills, is a crucial step in understanding their level of comprehension and ability to express their ideas in writing. This diagnostic assessment aims to identify students' strengths and weaknesses, as well as to determine areas that require further intervention or attention. Through this assessment, teachers can design more effective teaching strategies tailored to the individual needs of each student. The process of conducting diagnostic assessments in an educational environment, specifically in evaluating students' writing skills, involves several important stages: preparation, implementation, and evaluation.

1. **Preparation Phase** The preparation phase is the first and most crucial stage. In this phase, teachers or instructors must design assessment tools that align with the learning objectives. These tools can include assessment rubrics, evaluation criteria, or other relevant instruments. Preparation also includes selecting the writing topic or theme to be given to the students, as

well as determining the time parameters and conditions for administering the assessment. Moreover, it is important to ensure that students understand the instructions and purpose of the writing task assigned.

During the preparation phase, teachers design instruments to measure students' abilities before starting instruction. This can include the use of objective tests such as multiple-choice questions and short-answer questions, portfolios displaying students' work, and practical assessments such as presentations or projects to measure knowledge and skills. An initial assessment is conducted where students are tasked with writing a personal letter, which is then evaluated using a cognitive diagnostic assessment rubric to identify their strengths and weaknesses in writing. Common difficulties identified at this stage include issues with grammar, letter structure, and coherence in writing, while strengths may include rich vocabulary and creative ideas (Suarni, 2023).

Based on the findings from the initial assessment, teachers adjust their teaching strategies to meet the individual needs of students. This involves providing clear and constructive feedback to help students improve their writing and using various teaching techniques to address specific difficulties identified during the initial assessment. By adopting this approach, it is hoped that students can improve their writing skills more effectively.

2. Implementation Phase Moving on to the implementation phase, teachers plan and carry out the assessment with clear objectives, such as selecting assessment materials that align with students' basic competencies and formulating questions that are clear and understandable. After the assessment, where students are asked to write another personal letter, their writing is analyzed and compared with the results of the initial assessment to measure the improvement in their writing skills. A qualitative analysis of both the initial and final assessments is conducted to evaluate the effectiveness of the learning process based on cognitive diagnostic assessments (Suarni, 2023).

The main findings of this study indicate that cognitive diagnostic assessments can effectively identify students' difficulties and strengths, allowing teachers to provide appropriate interventions to enhance students' personal letter writing skills. In the evaluation phase, teachers assess students' understanding of the

cognitive diagnostic assessment they have learned during instruction. Feedback is provided on the cognitive diagnostic assessment to understand students' cognitive profiles, enabling educators to plan different learning approaches for diverse groups of students.

3. **Evaluation Phase** After the preparation phase of instruction, a final assessment is conducted where students are once again tasked with writing a personal letter. The analysis of this writing, compared with the initial assessment results, reveals a significant improvement in students' writing abilities, particularly in areas previously identified as weaknesses, such as grammar, letter structure, and coherence. This comparison shows that the learning interventions based on cognitive diagnostic assessment have successfully improved students' writing skills (Suarni, 2023).

In conclusion, the systematic application of diagnostic assessments in an educational setting, as evidenced by research conducted at an elementary school in Batanghari, demonstrates the effectiveness of identifying and addressing students' writing difficulties and strengths. By using cognitive diagnostic assessments throughout the teaching process, educators can tailor their instructional strategies to meet individual students' needs, leading to significant improvements in their writing skills. This research highlights the importance of using diagnostic assessments as a valuable tool in improving students' learning outcomes.

Cognitive Diagnostic Assessment (CDA) is essential for evaluating and understanding students' writing abilities, especially in learning to write personal letters in elementary school. Research has shown the positive impact of creative writing practices on the success, motivation, and writing attitudes of elementary school students (Ersoy & DEDE, 2022). Incorporating creative elements into writing instruction can enhance students' engagement and proficiency in writing personal letters. Explicit teaching strategies have been shown to be effective in improving L2 students' written output, demonstrating that targeted instruction can significantly enhance students' writing abilities (Teng, 2019).

The development of a culturally-based learning model has proven to improve the explanatory writing skills of elementary students (Kharisma et al., 2022). Writing fluency in letter writing is a key predictor of the quality and length of elementary students' writing, emphasizing the importance of basic writing skills (Parker et al., 2011). Cognitive diagnostic assessments can effectively evaluate reading skills in elementary students and guide interventions for students struggling with reading (Boom & Jang, 2018). Attention, executive function, and working memory play crucial roles in writing automation and affect students' writing proficiency (Bigozzi et al., 2021).

Different writing modes influence students' comprehension and fluency in responding to tasks, with personalized writing tasks enhancing the quality and fluency of students' written responses (Newell et al., 1989). Balancing lower-level writing activities with higher-level skills such as planning and content creation is essential for the development of young students' writing (Koster et al., 2015). Formative assessment practices and ongoing feedback are critical to enhancing students' understanding of scientific concepts and improving learning outcomes (Decristan et al., 2015).

Innovative instructional approaches, such as media-based learning strategies, can enhance elementary students' cursive writing skills (Rahmawati, 2024). Creative writing activities positively influence elementary students' achievement, attitudes, and motivation towards creative writing, highlighting the importance of integrating creative elements into writing instruction (Abbott et al., 2010). The longitudinal relationship between language proficiency in writing and the integration of writing and reading skills underscores the interrelated nature of literacy development.

In conclusion, utilizing cognitive diagnostic assessments, instructional strategies, formative assessments, and creative writing activities can significantly improve elementary students' writing skills, particularly in learning to write personal letters. Educators can use these insights to design targeted interventions, provide personalized feedback, and create engaging learning experiences to support students in developing proficiency in personal letter writing and other writing tasks.

## Discussion

In general, the stages of curriculum implementation are divided into three, according to (Busro, 2018:47): curriculum planning or preparation, curriculum execution, and curriculum assessment or evaluation. Findings regarding cognitive diagnostic assessment are not only relevant in the context of writing personal letters but can also influence future teaching practices in various areas of language learning and other subjects.

### 1. Curriculum Planning or Preparation

In this stage, the main focus is on developing and formulating the curriculum to be implemented. The planning process involves several important steps, including:

- **Needs Analysis:** Identifying the needs of students, the community, and labor market demands. This involves research and surveys to gather relevant data.
- **Setting Objectives:** Determining the educational goals to be achieved through the curriculum, both short-term and long-term.
- **Selection of Materials and Methods:** Deciding on the learning materials to be taught and the teaching methods to be used to achieve the established objectives.
- **Development of Resources:** Preparing teaching materials, learning media, and training for teachers and educational staff.

### 2. Curriculum Execution

The execution stage is the actual implementation of the planned curriculum. Key steps in this stage include:

- **Organizing the Learning Process:** Arranging class schedules, forming study groups, and organizing learning activities to ensure effective and efficient implementation.
- **Application of Teaching Methods:** Teachers use the planned methods and strategies to deliver material to students.



- **Utilization of Resources:** Utilizing the teaching materials, learning media, and technology that have been prepared to support the learning process.
- **Guidance and Supervision:** Teachers and educational staff provide continuous guidance and monitor students' learning progress.

### 3. Curriculum Assessment or Evaluation

This stage aims to assess the effectiveness and efficiency of curriculum implementation and its impact on students. Several aspects evaluated include:

- **Process Evaluation:** Measuring how well the learning process aligns with the established plan, including teacher performance and student participation.
- **Outcome Evaluation:** Assessing student achievement against learning objectives through various forms of assessment, such as tests, assignments, and projects.
- **Feedback and Improvement:** Using assessment results to provide feedback to teachers and students, as well as making improvements to the curriculum if necessary.
- **Reporting and Documentation:** Compiling evaluation reports that include findings, analyses, and recommendations for future curriculum development.

Findings regarding cognitive diagnostic assessment can be adapted to other language learning areas, such as reading, speaking, and listening, as well as to other subjects like mathematics and science. This approach can enhance student understanding and assist teachers in designing more effective instruction based on students' specific needs.

However, there are potential limitations in implementing cognitive diagnostic assessments, such as time constraints and teacher training. These limitations can be mitigated by providing adequate training for teachers to understand and effectively apply diagnostic assessments. Additionally, integrating technology in assessments can reduce time burdens and simplify the data analysis process.

These findings also align with existing theories regarding cognitive diagnostic assessment, emphasizing the importance of understanding student needs and potentials in curriculum development. However, challenges arise when teaching practices do not fully reflect existing theories. Therefore, it is essential to continue research and development in this field to ensure that teaching practices are grounded in solid theory.

## Conclusion

This research aims to provide insights into cognitive diagnostic assessment in teaching personal letter writing in elementary schools. The primary goal of this study is to enhance students' problem-solving abilities by developing cognitive assessments aligned with the key subject of stress. The study also reveals that student characteristics, such as their cognitive styles, significantly influence their problem-solving abilities. Thus, the findings contribute to the development of more suitable cognitive assessments that can improve problem-solving skills at the elementary school level.

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