



## THE EFFECTIVENESS OF BARRETT'S AND BLOOM'S TAXONOMY IN WRITING THE PISA MODEL READING COMPREHENSION TEST

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### ABSTRACT

International assessments such as PISA, TIMSS, and PIRLS indicate that Indonesian students perform poorly, ranking below Malaysia and far behind Singapore. This issue is compounded by internal challenges, including teacher quality. To address this, a study was conducted to evaluate the effectiveness of the Barrett and Bloom model evaluation question grid in PISA-style reading comprehension questions. The research utilized the ADDIE Research and Development model, analyzing two sets of teacher-created questions. A senior teacher developed Package A using a reading comprehension model, while a junior teacher designed Package B with a non-argumentative Bloom grid. Data analysis was conducted using a t-test in SPSS. The findings revealed that Package B outperformed Package A, with  $t = -11.133$  and a significance level of  $\leq 0.05$ . Additionally, most senior teacher-written questions were HOTS-based, making them more challenging and requiring critical thinking. Conversely, junior teacher-created questions were easier, with fewer HOTS elements, resulting in better test scores. Thus, the study concludes that the Barrett Grid is more effective in designing PISA-style reading comprehension questions.

**Keyword:** *Effectiveness, SOALL, Reading, PISA.*

### 1. INTRODUCTION

Education is a crucial factor in human resource development and directly impacts a country's progress. Indonesia allocates 20% of its budget to education, yet the quality remains unsatisfactory. According to UNESCO (2002), Indonesia ranks 69th out of 127 countries in the education development index. While it outperforms the Philippines, Cambodia, and Laos, it still lags behind Singapore and Malaysia. The 2018 PISA results further highlight this issue, with low scores in reading, mathematics, and science, all below the global average (Charmila et al., 2016; Masfufah & Ekasatya, 2021; Alifah, 2021).

International assessments such as PIRLS and TIMSS consistently place Indonesia in lower rankings, indicating that students are not

sufficiently exposed to international-standard questions that require critical thinking and higher-order cognitive skills (HOTS) (Embretson & Gorin, 2006; Himawan et al., 2022; Martin, 2020; Widana, 2020). This presents a significant challenge for Indonesia's education system in improving human resource quality.

Teachers play a central role in education quality, as stated in the 2005 Education Constitution (Downie & Proulx, 2022; Rahmi & Erlinda, 2014). The independent curriculum promotes text-based learning, particularly in language education, where students must develop critical reading skills through PISA-style questions (Alpian & Yatri, 2022; Kaforina et al., 2023; Oe et al., 2022).

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Designing such assessments involves key aspects, including question grids, text selection, and author qualifications (Brown, 2004; Hargreaves et al., 2002; Rokhyati, 2024).

Evaluation is an essential component of language learning, as it assesses students' ability to engage in critical thinking (Ayu et al., 2020; Fatonah, 2013; Leniati & Endang, 2021). However, high-quality text-based assessment models like PISA are not yet widely adopted in schools, despite their effectiveness in measuring critical thinking at an international level. Research on the quality of PISA-based questions is therefore highly relevant (Hewi & Muh, 2020; Himawan et al., 2022).

Learning evaluation aligns with instructional objectives, classified by scholars such as Papas, Parinas, Subali, and Zabadi. Bloom's taxonomy categorizes learning into cognitive, affective, and psychomotor domains (Baharuddin et al., 2021; Nisa et al., 2022; Parinas, 2009). The cognitive domain, further divided into six levels, was later revised by Anderson & Krathwohl (2001), who classified the three highest levels as HOTS, emphasizing critical thinking.

In reading comprehension assessments, the Barrett & Smith grid extends Bloom's taxonomy specifically for reading (Bloom et al., 1956; Pujiati, 2018). It includes components such as Literal Comprehension (recognition and recall) and Reorganization (classifying, summarizing, and integrating information) (Gorin, 2006). These frameworks guide the development of effective assessment tools for evaluating students' reading comprehension skills.

**2. METHODS**

This study utilizes the ADDIE Research and Development (R&D) model, focusing on the Development, Implementation, and Evaluation stages (Fraenkel et al., 2014). It examines two test packages: Package A, designed by senior teachers using Barrett's grid with argumentation texts, and Package B,

created by junior teachers using Bloom's grid with non-argumentation texts. The tests were administered to students from an A-accredited junior high school, involving Indonesian language teachers from MGMP Bantul, Yogyakarta, with six senior teachers and six junior teachers each developing 15 test items. During field testing, both packages consisted of 20 questions, and data were collected through questionnaires and tests to analyze students' backgrounds, class standings, reading preferences, and test results. The analysis was conducted using SPSS, incorporating expert opinions and relevant research to compare results and draw conclusions (Creswell, 2012).

**3. RESULT AND DISCUSSION**

Based on the results of data analysis, the effectiveness of Barret and Bloom taxonomy in writing the PISA model reading comprehension test can be explained as follows.

***Results of Data Analysis Using Statistical Programs***

The analysis reveals key findings: Package A questions, written by experienced senior teachers using Barrett's grid and argumentation texts, were more challenging, with 80% classified as HOTS-based. Meanwhile, Package B questions, created by junior teachers using Bloom's grid and non-argumentation texts, were easier, with only 20% HOTS-based items. Both test packages consisted of 20 questions and were completed within 60 minutes by students from A-accredited schools.

Statistical analysis showed a significant difference in test results, with Package B performing better due to its lower difficulty level. This aligns with Indonesia's low 2018 PISA rankings, emphasizing the need for improved basic education support. The study confirms that Barrett's grid is more effective for PISA-style HOTS reading tests, as it is specifically designed for reading comprehension, unlike Bloom's general

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framework. Additionally, argumentation texts are well-suited for HOTS-based assessments. These findings support prior research indicating that Barrett's grid is superior to Bloom's for evaluating reading comprehension.

***Results of Student Questionnaire Data Analysis***

The student questionnaire aimed to assess both the test performance and the underlying factors influencing students' results. The findings reveal that students with high academic abilities and a strong passion for reading achieved excellent scores. Those with moderate academic abilities who enjoyed reading also performed fairly well. However, students with lower academic skills and a lack of interest in reading obtained poor results. Several reasons contributed to students' disinterest in reading, including the absence of engaging materials, a preference for listening or watching videos, and the perception that reading is boring or makes them sleepy.

Despite this, some students expressed enjoyment in reading, citing reasons such as gaining knowledge, finding it enjoyable, and receiving motivation. They also acknowledged that reading broadens their insight and provides inspiration when answering test questions. These findings suggest that PISA test questions effectively stimulate students' critical thinking and reasoning skills. Moreover, the strong correlation between reading habits and academic success highlights the importance of fostering a reading culture among students.

To improve Indonesian students' PISA reading comprehension scores, schools must encourage reading habits by providing more engaging books and enhancing library resources. This aligns with Hevi (2020), who emphasized the connection between low reading comprehension and the quality of education in the Philippines. Additionally, Indonesia's low ranking in the 2018 PISA results further indicates the need for stronger teaching assistance in basic education

(Kemendikbud, 2020). Strengthening reading programs and offering better support to students could be key strategies in addressing this issue.

***The Effectiveness of Barrett and Bloom Grids in the Preparation of PISA Model HOTS-Based Reading Comprehension Tests***

The development of evaluation questions involves creating assessment instruments to measure learning outcomes, as conducted by both teachers and students in the classroom (Himawan & Suyata, 2022). This study developed two sets of questions: one by a junior teacher and another by a senior teacher. The questions were designed based on evaluation grids aligned with Bloom's taxonomy and Barrett's lattice (Barrett & Smith, 1976). Barrett's framework, which is specifically tailored for reading comprehension, expands on Bloom's taxonomy and consists of five levels: Literal Comprehension, Reorganization, Inferential Comprehension, Evaluation, and Appreciation.

The questions created by the teachers followed the PISA model for reading comprehension tests, ensuring alignment with both evaluation frameworks. To determine their effectiveness, an assessment was conducted involving Indonesian language teachers from the MGMP group in Bantul Regency. The questions were tested for their suitability and effectiveness using statistical analysis.

The effectiveness test employed an independent sample T-Test to analyze the differences between the two question sets. The statistical results revealed a significant difference, with  $t = 11.133$ ,  $df = 67$ , and a significance level of  $\leq 0.05$  (less than 5%). These findings indicate that the questions developed by senior and junior teachers had distinct characteristics and levels of difficulty, influencing student performance accordingly.

**Vol 8 No. 1 (2025): ESTEEM*****Qualifications of Authors for HOTS PISA-Based Reading Comprehension Questions and Effective Test Forms***

The effectiveness test results indicate that questions developed by junior teachers, who have limited experience in teaching Indonesian, are of lower quality compared to those created by senior teachers. Interviews reinforce this finding, highlighting that experience plays a crucial role in question development. Senior teachers, having participated in various training sessions and workshops organized by the Education Office and the Ministry of Education, demonstrate a stronger ability to construct high-quality evaluation questions (Himawan, 2021).

The pilot test conducted in two junior high schools in Bantul Regency further supports these findings. PISA-oriented test questions effectively stimulate students' interest and motivation while fostering critical thinking and reasoning skills (Charmilla et al., 2016; Kurniati et al., 2016; Dewi et al., 2020). Additionally, reading habits strongly correlate with student performance in PISA tests. As seen in studies on the Philippines' education system (Hevi, 2020), improving reading culture is essential for enhancing comprehension skills. The lack of engaging reading materials contributes to students' disinterest in reading, suggesting the need for better library resources. Moreover, Indonesia's low PISA ranking in 2018 (Kemendikbud, 2020) highlights the importance of teaching assistance in basic education.

To address these challenges, teachers should actively cultivate students' critical thinking skills through literacy activities. Beyond comprehension and memorization, students must be encouraged to analyze, critique, and comment on reading materials, both in content and language use. This approach will better equip them for higher-order thinking and improved PISA performance.

**4. CONCLUSION**

Based on the description in the research results and discussion above, the following conclusions can be drawn. Barrett's grid is more effective in preparing the PISA model HOTS-based reading test. Meanwhile, senior question writers, with higher education, experience in writing questions, and many training sessions on evaluation, both at the provincial and national levels, are better at writing reading comprehension tests based on the HOTS model of PISA. Regarding the text, argumentation text is more suitable for the PISA model HOTS-based reading comprehension test. Some implications of this study are that teachers need to improve their qualifications in terms of learning evaluation. There have been many trainings for teachers, but only a few of them are specialized in evaluation. The reading movement in schools can be encouraged again. The reading craze is still needed. Many shows require reading activities. Teachers can assign students to look at them and report the results.

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