

Cognitive Level Analysis of Summative Assessments: A Basis for A Professional Development Framework for Public Secondary English Teachers in Bagabag 1 District

Caroline E. Mesias¹, Eileen B. Bugnay²

¹ *MAT-English, College of Advanced Education, Ifugao State University, Nayon, Lamut, Ifugao*

² *Professor, College of Advanced Education, Ifugao State University*

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Email of Corresponding Author: caroline.mesias@deped.gov.ph

Abstract

This study analyzed the cognitive alignment of summative assessments in public secondary English classrooms in Bagabag I District as a basis for developing a professional development framework for teachers. Specifically, it examined the distribution of test items across the levels of the Revised Bloom's Taxonomy, remembering, understanding, applying, analyzing, evaluating, and creating, to provide a detailed cognitive mapping and determine the extent to which higher-order thinking skills are integrated into classroom assessments. A mixed-methods design was employed, combining document analysis of summative test items with semi-structured interviews of public secondary English teachers, with data triangulation used to validate findings and examine alignment between reported practices and actual assessment content. Results revealed that assessments were largely concentrated on lower-order cognitive skills, with higher-order thinking skills significantly underrepresented. While teachers recognized the importance of cognitive alignment, they reported challenges, including limited training, time constraints, and insufficient instructional resources. Based on these findings, a professional development framework was proposed to strengthen teachers' competencies in designing cognitively aligned assessments, thereby improving instructional effectiveness and student learning outcomes. This study contributes to the literature by offering a nuanced analysis of cognitive levels and identifying key factors influencing assessment practices. It directly supports Sustainable Development Goal 4 (Quality Education) by promoting improved assessment design and enhancing the quality of teaching and learning in secondary education.

Keywords: cognitive alignment, summative assessment, Revised Bloom's Taxonomy, English teachers, professional development, secondary education

1. Introduction

In contemporary education, teaching has evolved beyond the simple recall of information toward fostering meaningful learning through the development of higher-order thinking skills (HOTS). Learners are now expected not only to understand concepts but also to analyze, evaluate, and apply knowledge in real-life contexts. This shift is anchored in the framework of the Revised Bloom's Taxonomy developed by Lorin Anderson and David Krathwohl, which categorizes cognitive processes from basic remembering to complex creating. The taxonomy serves as a valuable guide for educators in designing instruction and assessments that promote deeper and more meaningful learning (Anderson & Krathwohl, 2001).

Assessment plays a critical role in shaping how students think and learn. Beyond measuring knowledge retention, it significantly influences how learners process information, solve problems, and construct meaning. Effective assessment practices should therefore extend beyond memorization and provide opportunities for learners to demonstrate critical thinking, creativity, and independent reasoning (Brookhart, 2010; Nitko & Brookhart, 2014). When aligned with cognitive objectives, assessments can reinforce instructional goals and support the development of essential 21st-century skills.

In the Philippine context, the K to 12 curriculum underscores the importance of developing higher-order thinking skills, as emphasized in DepEd Order No. 8, s. 2015. This policy encourages teachers to design assessments that allow learners to analyze, evaluate, and apply knowledge in authentic contexts. However, despite these directives, several studies have shown that classroom assessments often remain concentrated on lower-order thinking skills (Prasad, 2013; Briggs & Freeman, 2011), revealing a persistent gap between policy expectations and actual classroom practices.

This gap highlights the need to closely examine how assessments are designed in real educational settings. In particular, there is limited research focusing on the summative assessment practices of secondary English teachers in

Bagabag I District. Understanding how teachers construct their assessments, as well as the challenges they encounter in aligning them with cognitive objectives, is essential in improving the quality of assessment practices.

To address this gap, the present study analyzes teacher-made summative tests using the framework of the Revised Bloom's Taxonomy and explores teachers' perspectives through semi-structured interviews. The findings of the study serve as the basis for a proposed "Information Forum on Fostering Critical Thinking Skills," aimed at enhancing teachers' competencies in designing cognitively aligned assessments and promoting the integration of higher-order thinking skills in secondary English classrooms.

2. Material and methods

The materials and methods used in this study focus on examining the cognitive alignment of summative assessments and the integration of higher-order thinking skills (HOTS) in secondary English classrooms. This section presents the research design, participants, instruments, procedures, data analysis, and ethical considerations employed in the study.

2.1. Research Design

This study employed a convergent mixed-method design, enabling the simultaneous collection and analysis of quantitative and qualitative data to examine the integration of higher-order thinking skills (HOTS) in English summative assessments. Quantitatively, content analysis was utilized to classify test items from secondary English teachers in the Bagabag I District (Quarters 1 and 2, SY 2025–2026) according to the Revised Bloom's Taxonomy (Anderson & Krathwohl, 2001), identifying their corresponding cognitive levels. Qualitatively, semi-structured interviews were conducted to explore teachers' understanding of HOTS and the challenges they encounter in test construction. The findings from both data sets were compared and validated to determine the alignment between teachers' perspectives and their actual assessment practices. The integrated results served as the basis for the development of the proposed "Information Forum on Fostering Critical Thinking Skills."

2.2. Participants of the Study

The respondents of the study were twelve (12) English language teachers from three public secondary schools in the Bagabag I District, Nueva Vizcaya. These participants were selected because they are directly responsible for crafting and designing summative tests in English for each quarter of the school year. Purposive sampling was employed to ensure that only teachers actively engaged in assessment design were included in the study.

2.3. Instruments of the Study

English summative test papers for Quarters 1 and 2 were used as the primary source of quantitative data. A rubric based on the Revised Bloom's Taxonomy (Anderson & Krathwohl, 2001) was utilized to classify test items into higher-order thinking skills (HOTS) and lower-order thinking skills (LOTS). For the qualitative component, a semi-structured interview guide was developed to gather in-depth insights into teachers' understanding of HOTS and the challenges they encounter in designing assessments. These instruments enabled the study to integrate item analysis with teachers' perspectives, providing a comprehensive understanding of assessment practices.

2.4. Procedure

First and Second Quarterly English test papers from secondary teachers in the Bagabag I District were collected for analysis. Subsequently, semi-structured interviews were conducted to explore teachers' understanding of HOTS, as well as their strategies and challenges in designing assessments. Test items were classified according to the specific cognitive levels of the Revised Bloom's Taxonomy, while interview responses were examined to identify recurring patterns and themes. This combined approach generated both quantitative data on item distribution and qualitative insights into teacher practices, which informed the proposed Information Forum on Fostering Critical Thinking Skills.

2.5. Data Analysis

Descriptive statistics, specifically frequency and percentage, were used to analyse the distribution of cognitive levels in English summative tests. Qualitative data from the interviews were analysed using Reflexive Thematic Analysis as described by Braun and Clarke (2021). This process involved data familiarization, coding, theme development, and interpretation. The quantitative and qualitative findings were then integrated to provide a comprehensive understanding of teachers' assessment practices and to support the development of the proposed intervention.

2.6. Ethical Considerations

The study adhered to ethical research standards by ensuring voluntary participation, informed consent, and confidentiality of all respondents. Permission to conduct the study was secured from the Schools Division Superintendent and respective school heads before data collection. Participants were assured that their responses and submitted test materials would be used solely for research purposes and reported in aggregate form to protect their identities.

3. Results and discussion

Assessment reflects how well learning tasks align with intended cognitive skills. Analyzing the distribution of test items across cognitive levels provides insight into the depth and effectiveness of classroom assessment practices.

3.1. Distribution of Summative Test Items across the Levels of the Revised Bloom's Taxonomy

The table below presents the distribution of summative test items across the different cognitive levels of the Revised Bloom's Taxonomy. It shows the frequency and percentage of items categorized under Lower-Order Thinking Skills (LOTS) and Higher-Order Thinking Skills (HOTS), providing a clear overview of how assessment tasks are aligned with varying levels of cognitive demand.

Table 2. *Frequency and Percentage Distribution of Summative Test Items by Cognitive Level (N = 1,935)*

Cognitive Level	Frequency (f)	Percentage (%)
Remembering (LOTS)	321	16.59
Understanding (LOTS)	632	32.66
Applying (LOTS)	412	21.29
Analyzing (HOTS)	487	25.17
Evaluating (HOTS)	73	3.77
Creating (HOTS)	10	0.52

Table 2 shows the distribution of 1,935 English summative test items from Bagabag National High School, Murong Agri-Fishery School, and Paniki High School. Most items focused on lower-order thinking skills (LOTS), which comprised 70.54% of the total. Understanding led with 32.66%, followed by Applying at 21.29% and Remembering at 16.59%. Higher-order thinking skills (HOTS) made up only 29.46%, with Analyzing at 25.17%, Evaluating at 3.77%, and Creating at 0.52%. These results indicate that summative tests largely assess comprehension and application, with very few items promoting critical evaluation or creation of original work. While analyzing items suggests some attention to deeper thinking, the minimal number of Evaluating and Creating questions highlights a gap between classroom practice and the cognitive levels suggested by the Revised Bloom's Taxonomy.

Similar findings have been reported in previous studies, including Sausan and Rohmatillah (2023) and Kamlasi (2018), which also noted the dominance of Remembering and Understanding in teacher-made tests, with limited higher-order tasks. These results underscore the need for professional development initiatives such as in-service trainings, collaborative workshops, and learning action cells to help teachers design assessments with a balanced distribution across all cognitive levels. Such interventions would not only enhance teachers' capacity to create higher-order questions but also provide students with more opportunities to develop critical thinking and problem-solving skills, better preparing them for higher education and professional life.

3.2 Challenges in Aligning Summative Assessments with Cognitive Levels

To better understand the difficulties teachers face in designing cognitively aligned assessments, the study explored their experiences through interviews. Responses revealed recurring patterns that highlight practical obstacles in matching test items to the intended levels of the Revised Bloom's Taxonomy. Figure 1 summarizes the main challenges reported by the teachers.

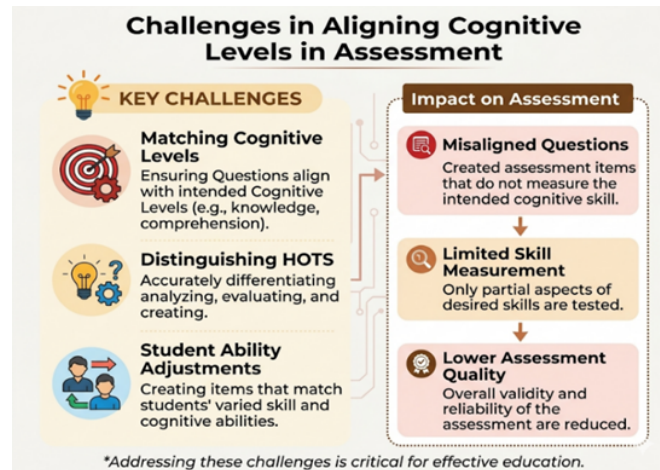
Figure 1: *Challenges in Aligning Cognitive Levels in Assessment*


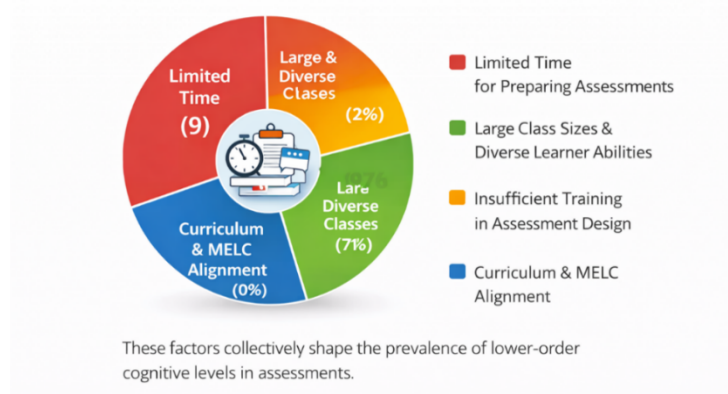
Figure 1 shows that secondary English teachers in Bagabag I District face several challenges in aligning summative test items with the cognitive levels of the Revised Bloom's Taxonomy. A common difficulty is matching test questions to intended cognitive levels. Teachers often struggle to create items that accurately measure higher-order thinking skills (HOTS) such as analyzing, evaluating, and creating. For example, a question intended to assess Analyzing often only required basic understanding or recall, highlighting the gap between theoretical knowledge of Bloom's Taxonomy and practical application.

Designing HOTS questions also presents challenges in wording, scoring, and aligning with students' abilities. Teachers reported that evaluating or creating items is more time-consuming and difficult than crafting simple recall questions. To manage student readiness, some teachers simplify higher-order tasks, thereby reducing the cognitive rigor of assessments and limiting opportunities for critical thinking. These findings suggest that successfully implementing Bloom's Taxonomy in assessments requires both knowledge and confidence in designing higher-order questions. Teachers indicated a need for professional development that provides practical examples, collaborative workshops, and hands-on guidance in writing, critiquing, and revising assessment items.

Overall, the study aligns with previous research (Lopez et al., 2022), which notes that although teachers understand the importance of HOTS, translating this into classroom assessments remains challenging. Structured support through training and collaborative practice is essential to enable teachers to produce assessments that foster deeper thinking, problem-solving, and creativity in students.

3.3 Factors Contributing to the Distribution of Cognitive Levels in Summative Assessments

Several factors influence how teachers design summative assessments. Figure 2 illustrates the most common challenges reported by the participants.

Figure 2. *Factors Contributing to the Distribution of Cognitive Levels in Summative Assessments*


Interviews revealed several factors influencing how teachers design cognitively aligned assessments. A primary challenge is limited time: with teaching, grading, planning, and administrative duties, teachers often default to simpler question types that are quicker to prepare, limiting opportunities for higher-order thinking tasks.

Large class sizes and diverse student abilities also shape assessment design. Teachers find it difficult to create questions that challenge advanced learners while remaining manageable for struggling students, often prioritizing foundational knowledge over higher-order skills.

Limited hands-on training further affects test construction. While teachers learn Bloom's Taxonomy in pre-service and in-service programs, many report a lack of practical exercises, collaborative planning, and sample item reviews to strengthen their skills. Curriculum demands and alignment with the Most Essential Learning Competencies (MELCs) add additional pressure, pushing teachers to emphasize content coverage and objective-type questions over open-ended, cognitively demanding tasks.

These findings indicate that assessment practices are shaped not only by teachers' knowledge but also by classroom realities and school expectations. Meaningful professional development, collaborative planning, and resource support are essential to help teachers design assessments that foster higher-order thinking skills. Similar challenges, including time constraints, large classes, and limited training, were also reported in previous studies (Taguinod, 2023), underscoring the need for both teacher-level support and institutional resources.

3.4 Triangulation of Teachers' Perceptions and the Actual Distribution of Test Items

To validate teachers' perceptions against actual classroom practices, the distribution of cognitive levels in summative test items was compared with their interview responses. Table 3 summarizes this triangulation, highlighting the alignment between reported practices, observed test items, and the challenges influencing assessment design.

Table 3: Summary of Triangulated Data: Teachers' Perceptions and Actual Distribution of Summative Test Items

Theme	Interview Data	Document Analysis	Triangulation Conclusion
LOTS (Remembering, Understanding, Applying)	Teachers mostly use multiple-choice questions, identification, and essays; report comfort with lower-order items	70.54% of test items are LOTS; Understanding highest	Strong alignment: teachers focus on lower-order skills as reported
HOTS (Analyzing, Evaluating, Creating)	Teachers struggle with higher-order questions; few performance tasks included	29.46% HOTS; Analyzing 25.17%, Evaluating & Creating very low	Partial alignment: attempt to integrate HOTS but minimal implementation at top levels
Bloom's Taxonomy Alignment	Teachers know taxonomy but find applying it challenging	Distribution shows heavy LOTS, limited HOTS	Confirms gap between theoretical knowledge and practice
Challenges	Time, class size, MELC alignment, insufficient training	Reflected in low frequency of HOTS items	Triangulation validates teachers' reported challenges

Document analysis of 1,935 summative test items was triangulated with teachers' interviews to validate findings. Results show that lower-order thinking skills (LOTS) dominated (70.54%), mainly Understanding (32.66%), Applying (21.29%), and Remembering (16.59%), reflecting teachers' preference for multiple-choice and identification items due to ease of preparation, grading, and division mandates.

Higher-order thinking skills (HOTS) accounted for only 29.46%, mostly Analyzing (25.17%), with Evaluating and Creating totaling 4.29%. Teachers reported challenges designing HOTS questions, particularly in distinguishing cognitive levels and creating tasks requiring critical judgment, originality, or synthesis. Performance-based tasks were rare, mirroring the low HOTS representation.

The triangulation reveals a gap between knowledge of Bloom's Taxonomy and practical application, influenced by time constraints, large class sizes, diverse student abilities, curriculum coverage, and limited assessment training. LOTS-focused tests limit opportunities for critical thinking, problem-solving, and creativity.

These findings highlight the need for professional development, collaborative item-writing sessions, and practical resources to support teachers in producing balanced assessments that integrate higher-order thinking skills and foster deeper learning.

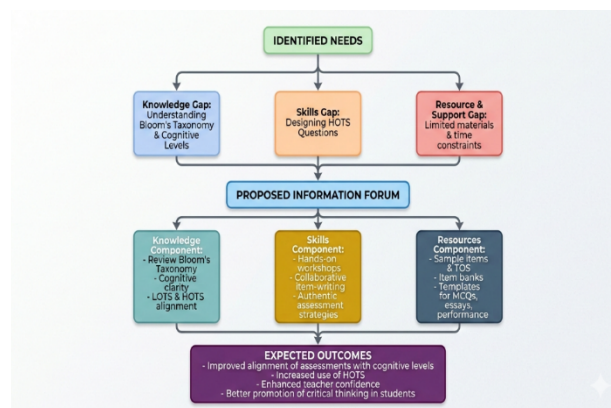
3.5 Proposed Information Forum on Fostering Critical Thinking Skills

Findings from the analysis of 1,935 summative test items show that classroom assessments in Bagabag I District are heavily dominated by Lower-Order Thinking Skills (LOTS), with Understanding (32.66%) and Applying (21.29%) most frequent. In contrast, Higher-Order Thinking Skills (HOTS) were underrepresented, particularly Evaluating (3.77%) and Creating (0.52%). Interviews confirmed that while teachers understand Bloom's Taxonomy and value higher-order thinking, practical challenges, such as distinguishing cognitive levels, limited preparation time, large and diverse classes, and lack of hands-on training, limit their implementation of HOTS in assessments.

These findings indicate that the scarcity of HOTS items stems not from a lack of awareness but from systemic constraints and limited professional support. To address this, the study proposes the Information Forum on Fostering Critical Thinking Skills, a professional development initiative designed to enhance teachers' capacity to create cognitively balanced assessments. The forum aims to:

1. Strengthen the application of Bloom's Taxonomy in summative test design, ensuring a balance of LOTS and HOTS.
2. Build teacher competence in crafting higher-order questions, particularly for Analyzing, Evaluating, and Creating, through guided workshops and hands-on exercises.
3. Provide accessible resources, including item banks, Table of Specifications templates, and sample test items.
4. Address contextual challenges, such as large class sizes, curriculum demands, and limited instructional time, through collaborative planning and strategy-sharing sessions.

Figure 3. *Proposed Information Forum Framework for Fostering Critical Thinking Skills*



The forum connects identified challenges, contextual factors, and practical strategies, offering a needs-driven approach based on real classroom experiences. It provides a structured space for teachers to refine assessment practices, actively integrate higher-order thinking skills, and enhance students' critical thinking, problem-solving, and creativity, in line with the goals of the K to 12 curriculum.

4. Conclusion

The study found that English summative assessments in Bagabag I District are largely concentrated on lower-order thinking skills (LOTS), particularly Remembering and Understanding, with minimal representation of higher-order thinking skills (HOTS) such as Evaluating and Creating. Although teachers demonstrate awareness of the Revised Bloom's Taxonomy and recognize the importance of HOTS, triangulated findings from test analysis and interviews reveal a gap between theoretical knowledge and actual assessment practices. The study further highlights that practical constraints, including limited preparation time, large and diverse classes, insufficient training, and curriculum demands, hinder the consistent integration of higher-order tasks. These challenges affect teachers' ability to design cognitively balanced assessments that promote deeper learning.

To address these issues, the study emphasizes the need for targeted and sustained support. Teachers should participate in practical professional development initiatives such as workshops, collaborative item-writing sessions, and learning action cells. At the same time, school leaders and policymakers must provide clear guidelines, accessible assessment resources, and mentorship opportunities. Programs like the proposed Information Forum on Fostering Critical Thinking Skills can serve as a structured approach to enhancing teachers' competence in developing higher-order assessment items. Overall, strengthening teachers' assessment design skills will lead to more balanced and cognitively engaging summative tests, ultimately fostering learners' critical thinking, problem-solving, and creativity, benefiting both the education system and society while paving the way for more responsive and future-ready assessment practices.

REFERENCES

- Adao, J. M. (2025). *Practices in integrating higher-order thinking skills: Analysis of Grade 7 English quarterly assessments and teacher practices (Philippines)* [Unpublished report].
- Asiedu, E., Amuah, E. E. Y., & Mensah, D. K. D. (2022). Reflection of cognitive level in test items constructed by teachers: A Ghanaian case study. *Semantic Scholar*.
- Asikcan, M. (2023). A taxonomic analysis of the questions prepared by prospective teachers according to revised Bloom's taxonomy. *Journal Article*. <https://www.researchgate.net>
- Baghaei, S. (2020). Analysis of IELTS/TOEFL reading and listening test items in terms of Bloom's taxonomy. *International Journal*. <https://www.researchgate.net>
- Department of Education. (2016–2023). *Policy guidance on integrating higher-order thinking skills in basic education assessments*.
- Fitriani, W. W. (2019). The realization of higher-order thinking skills on summative test items designed by English teacher group discussion. *English Focus Journal*. <https://ejournal.radenintan.ac.id>
- Frontiers in Education. (2025). Automated classification of exam items by Bloom's taxonomy: Promise and limits. *Frontiers in Education*.
- Granthaalayah. (2020). Analysis of senior secondary examination questions according to cognitive complexity. *Granthaalayah Journal*. <https://www.granthaalayahpublication.org>
- Ichsan, I. Z. (2019). HOTS-AEP: Measuring higher-order thinking skills across levels using problem-based assessments. *Conference Paper*.
- Ilham, N. W., & Hartini. (2020). Analysis of higher-order thinking skills items in senior high school English national examination 2019. *Conference Paper*.
- Kamlasi, I. (2018). Descriptive analyses on English test items based on the application of revised Bloom's taxonomy. *Metathesis: Journal of English Language, Literature, and Teaching*, 2(2), 203–210. <https://core.ac.uk/download/595552660.pdf>
- Lestari, E. S. (2025). Analysis of higher-order thinking skills in English final exam questions (private schools, Yogyakarta). *Eternal Journal*. <https://journal2.upgris.ac.id/index.php/eternal/article/view/892>
- Lopez, M. Y., Dizon, G. R., & Reyes, A. P. (2022). Beliefs and practices pertaining to test design using revised Bloom's taxonomy. *MEXTESOL Journal*.
- Mujayanah, S., Indah, D. R., Prihantini, A. F., & Setyowati, Y. (2022). Higher-order thinking skills in reading comprehension questions of English textbooks for secondary school. *BIRCI Journal*. <https://bircu-journal.com/index.php/birci/article/view/6390>
- Moto, A. (2020). Developing item analysis of teacher-made tests using Bloom's taxonomy. *Conference Proceedings*. <https://pdfs.semanticscholar.org/2c41/afe7437895fc89764001d2f2b2bfa09fdd58.pdf>
- Paramartha, Y. (2019). The reflection of higher-order thinking skills in EFL teachers' summative assessment. *Conference Proceedings*.
- Putra, R. (2020). Implementation of Bloom's taxonomy in English summative test items for senior high school. *Conference Paper*. <https://www.researchgate.net>
- Putri, T. A., & Trianto, A. (2023). An analysis of higher-order thinking skills level questions on end-of-semester objective tests. *University of Bengkulu*. <https://pdfs.semanticscholar.org/53fe/4284561b70cca68d89283fff6ddca0c89b37.pdf>
- Putri, W. (2021). The analysis of higher-order thinking skills in the test questions constructed by English teachers. *Advances in Social Science, Education and Humanities Research*. <https://www.researchgate.net/publication/362287571>
- Rohadi, A. S. (2023). *An analysis of English achievement in final test based on revised Bloom's taxonomy (8th grade)* [Undergraduate thesis, Universitas Mataram]. https://eprints.unram.ac.id/35327/13/Thesis_ALYA%20SHERLY%20ROHADI_EID018006.pdf
- Sausan, K., & Rohmatillah. (2023). Higher-order thinking skills based on revised Bloom's taxonomy in English examination test items used in high school level. *Journal of English Education*. <https://ejournal.radenintan.ac.id/index.php/ENGEDU/article/download/16103/6228>
- Sidauruk, C. O., & Gultom, J. J. (2021). Cognitive levels of English summative test of Grade VIII at SMP N 2 Simanindo. *ISLAE Proceedings*. <https://digilib.unimed.ac.id/id/eprint/44016/1/Fulltext.pdf>
- Tavárez DaCosta, P. J. (2021). A comparative analysis of PISA items using revised Bloom's taxonomy. *Journal Article*.
- Yarcia. (2016). *Implication of the NCAE-English result on teaching-learning practices among teachers of Northern Nueva Vizcaya* [Master's thesis, Nueva Vizcaya State University].