



Exploring Students' LOTS and HOTS in Answering Reading Questions

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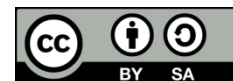
ABSTRAK

Pada abad kedua puluh satu, dunia pendidikan harus memenuhi tuntutan belajar mengajar yang berkaitan dengan kemampuan berpikir. Bagi orang yang lebih bernalar dan intelektual, kemampuan berpikir sangat diperlukan. Siswa harus mampu berpikir untuk mencapai tujuan pembelajarannya. Guru menghadapi dilema di kelas dalam hal keterampilan berpikir tingkat tinggi. Guru memasukkan kemampuan berpikir tingkat tinggi ke dalam proses belajar mengajar untuk memberikan pengalaman kepada siswa, terutama dalam menjawab pertanyaan tentang kemampuan berpikir tingkat tinggi. Siswa sering mengalami kesulitan dalam menjawab soal HOTS. Akibatnya, siswa kesulitan menjawab pertanyaan pemahaman bacaan. Tujuan dari penelitian ini adalah untuk mengeksplorasi apa itu LOTS dan HOTS siswa dalam menanggapi pertanyaan bacaan. Jenis penelitian ini yaitu deskriptif kualitatif. Pengumpulan data dilakukan dengan memberikan tes membaca kepada 18 siswa. instrumen yang digunakan dalam mengumpulkan data yaitu kuesioner. Teknik analisis data yaitu analisis deskriptif kualitatif. Hasil penelitian menunjukkan bahwa pertama, kemampuan siswa menjawab pertanyaan membaca berdasarkan LOTS baik. Kedua, kemampuan siswa menjawab pertanyaan membaca berdasarkan HOTS kurang. Ketiga, perbedaan kemampuan siswa menjawab pertanyaan membaca berdasarkan LOT dan HOT sudah Cukup. Sebagai hasil dari temuan tersebut, kemampuan siswa untuk menjawab pertanyaan bacaan berdasarkan LOTS dan HOTS harus ditingkatkan.

ABSTRACT

In the twenty-first century, the education world must fulfill the demands for teaching and learning connected to thinking abilities. For people who are more nuanced and intellectual, the ability to think is necessary. Students must be able to think to reach their learning objectives. Teachers face dilemmas in the classroom in terms of higher-order thinking skills. Teachers incorporate higher-order thinking skills into the teaching and learning process to provide experiences to students, especially in answering questions about higher-order thinking skills. Students often have difficulty answering HOTS questions. As a result, students have difficulty answering reading comprehension questions. This study aimed to explore what students' LOTS and HOTS were in response to reading questions. This type of research is descriptive and qualitative. Data was collected by giving a reading test to 18 students. The instrument used in collecting data is a questionnaire. The data analysis technique is descriptive qualitative analysis. The results showed that the student's ability to answer reading questions based on the LOTS was good. Second, the ability of students to answer reading questions based on HOTS is lacking. Third, the difference in student's ability to answer reading questions based on LOT and HOT is enough. As a result of these findings, students' ability to answer reading questions based on LOTS and HOTS should be improved.

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1. INTRODUCTION

In the twenty-first century, the education world must fulfill the demands for teaching and learning connected to thinking abilities. For people who are more nuanced and intellectual, the ability to think is necessary. Students must be able to think to reach their learning objectives (Fatimahtuzzahroh et al., 2021; Songkram, 2015). Students must possess the "4C" which include critical thinking, communication, cooperation, and creativity, to succeed in a global society (Astuti et al., 2019; Kembara et al., 2018). There are two types of 21st-century abilities: abstract thinking ability (creative thinking and critical thinking) and tangible ability (communication and collaboration) (Eugenia et al., 2013; Meyer, 2020). As a result, those abilities must be included in classroom activities to prepare students.

Assessment is a critical component of both teaching and learning in the classroom. Assessment is the act of obtaining, comprehending, and analyzing data to enhance decision-making (Bodrud-Doza et al., 2020; Siddiq et al., 2019). It is used to evaluate students' progress and determine how well they have mastered a

particular subject. In the classroom, there are three major domains for assessment (Martínez-Sierra et al., 2020; Meihami & Razmjoo, 2016; Sudana et al., 2020). The first is the cognitive domain, which includes cognitive functions, including memory, interpretation, application, problem-solving, and critical thinking (Hyder & Bhamani, 2016; Widiani & Rendra, 2020). The second is the affective domain, which includes feelings, attitudes, values, interests, and emotions. The third is the psychomotor domain includes physical tasks and behaviours that require students to manage items (Nugraha & Wahyono, 2019; Wu et al., 2019).

Lower-order thinking skills (LOTS) and higher-order thinking skills (HOTS) are the two categories that Bloom's Taxonomy divides thinking skills into (Abosalem, 2016; Ichsan et al., 2019). To move to higher-order thinking skills (HOTS), students must have lower-order thinking skills (LOTS). Lower-order thinking skills (LOTS) are defined by the capacity to remember and interpret information (Jansen & Möller, 2022; Kwangmuang et al., 2021). Lower Order Thinking Skills (LOTS) include remembering (C1), understanding (C2), and applying (C3). Meanwhile, higher-order thinking skills (HOTS) present a framework for how students' critical thinking skills increase throughout their educational experience (Mubarok & Anggraini, 2020; Mustika & Susanti, 2020; Suherman et al., 2020). The Higher-Order Thinking Skills category includes the ability of analyzing (C4), evaluating (C5), and creating (C6) (HOTS).

Remembering is the first step in the cognitive process (Dahlan et al., 2020; Lau et al., 2018). It arises when students explain, discuss, inform, or specify a specific issue. The next step is understanding. It occurs when students have completely understood what they have read. Retelling, inferring, interpreting, explaining, predicting, and outlining information are the keywords at this level. The third step is applying. Students are required to apply what they have learned in the classroom in a new context. The fourth step is analyzing. It comprises breaking down a substance into its constituent pieces and figuring out how the components fit together to form a bigger structure. Differentiating, arranging, and attributing are some of the keywords. The sixth step is evaluating. It comprises making a decision based on a set of criteria. The last step is creating. Creating means putting elements together into a form and the whole form is coherent and functional. The keywords in this stage are generating or describing problems, planning, and producing (Anrasiyana et al., 2022; Battisti et al., 2022; Gottzén & Sandberg, 2017).

Higher-order thinking skills have become a national educational priority in Indonesia. This is reflected in the Law of the National Education System, enacted in 2003: "...developing students' ability to become critical, creative, and independent citizens" (Mubarok & Anggraini, 2020; Suherman et al., 2020). However, according to the PISA 2018 results, Indonesian students in reading tests are placed 72 out of 79 members of the nations, with a mean score of 371. Motivation, students' attitudes in EFL classes, and reading strategies are all aspects that might influence students' language learning (Renandya, 2013; Shih & Reynolds, 2015). Other issues include the teacher's material and teaching approach, both of which are ineffective in training students to answer the HOTS's items in reading. As a result, the students are accustomed to addressing LOTS of questions while reading. The fundamental issue is that Indonesian students are not provided enough practice in answering contextual questions that demand concrete action, reasoning, and innovation, all of which are PISA characteristics questions. Then there is the lack of teachers' ability to create instrument assessments for HOTS, as well as a lack of or inaccessibility of instrument evaluations specifically meant to train HOTS (Hamdi et al., 2018; Widyaningsih et al., 2020).

Vocabulary knowledge, prior knowledge, meta-cognitive information, and reading methods are all factors that influence students' reading competence (Alavi & Akbarian, 2020; Pourhosein Gilakjani & Sabouri, 2016). Then, students' reading attitudes, adequate teaching on comprehension techniques, variety, and text form, as well as awareness of various reading comprehension strategies, are all aspects that impact students' reading literacy (Gilakjani, 2017; I. P. I. Kusuma et al., 2017). As a result, most students struggle with higher-order thinking skills in reading. Teachers in the classroom have a problem with developing higher-order thinking skills, which is one of the national educational goals. Teachers include higher-order thinking skills in teaching and learning process to provide students experience, particularly with problems that need higher-order thinking skills (Mubarok & Anggraini, 2020; Suherman et al., 2020). The study focuses on the application of lower-order and higher-order cognitive abilities to reading questions. Answering reading questions, especially ones that involve higher-order thinking abilities, is a challenge for many students (HOTS). As a result, students are unable to respond effectively to reading questions.

The cognitive levels of comprehension questions presented in reading and writing textbooks for Al-Imam Mohammad ibn Saud Islamic University (IMSIU) first-year English Department students, as well as the thinking levels of questions posed by EFL instructors to IMSIU's first-year English Department students (Alnofal, 2018). The most of questions posed to first-year instructors are of a lower cognitive level (knowledge, comprehension, and application). Furthermore, the textbook study demonstrated that both textbooks preferred lower-level cognitive abilities. The results revealed that students' reading skills in answering higher-order thinking items on descriptive and recount texts is weak or low, with descriptive text and recognizing the important concept earning the highest mean score (Riadi & Tantra, 2020). Then, there is no substantial variance

in students' reading competency in answering higher-order thinking items across classes, text genres, or reading indicators. The research, explored the distribution of HOTS in English teacher-made tests, the relevance of the English teacher-made test to the skills in English simplified syllabus, and the reason for HOTS being less common in English-made tests (Syahdanis et al., 2021). The findings imply that instructors' exam questions should contain more HOTS-type questions because the assessments are mostly LOTS-type questions (Musliha et al., 2021). The purpose of this research is to explore what students' LOTS and HOTS are when it comes to responding to reading questions.

2. METHOD

A descriptive qualitative study was used for this research. This research involved students in the twelfth grade from one of the senior high schools in Salatiga. Purposive sampling was used to choose the students, resulting in a total of 18 students. The students were between the ages of 16 and 17. The data was obtained through a reading questions test. Reading questions based on LOTS and HOTS from twelfth-grade textbooks are delivered to the students. Previously, the researcher examined the reading questions using the indicators of LOTS and HOTS, which were proposed by Anderson and Krathwohl (2001). In addition, the test contained 12 reading questions, six of which were LOTS' questions and six of which were HOTS' questions. The reading questions are shown in Table 1.

Table 1. Reading Questions Item based on LOTS and HOTS

No.	Reading Questions Item	Indicator	LOTS	HOTS
1	Where do you think the conversation takes place?	Understanding	√	
2	What is the relationship between the speakers?	Understanding	√	
3	What the statement is the patterns of offering help/service?	Applying	√	
4	What is the position being advertised?	Remembering	√	
5	How did Lilis Handayani know about the vacancy?	Remembering	√	
6	Do you think Lilis is confident about her competence? How do you know?	Evaluating		√
7	Does Lilis indicate her willingness for an interview? Find the evidence from the text?	Evaluating		√
8	What does friendship mean?	Analyzing		√
9	What do you think about the quote in this caption?	Analyzing		√
10	According to you, which sentence or phase under the word "friendship" in the caption?	Applying	√	
11	If you were one of the parents, what would you do to deal with the problem in the online system?	Creating		√
12	If you were the acting governor, how would you respond to the parent's concerns?	Creating		√

The researcher scrutinized the students with reading questions based on LOTS and HOTS. Then, the result was scored and categorized to identify students' LOTS and HOTS in answering reading questions. The score and categorization were using the grading criteria proposed by Harris (1969), as shown in Table 2.

3. RESULT AND DISCUSSION

Result

Based on data analysis, students were categorized as Poor (11%) in answering LOTS-based reading questions. They reach a score ≤ 39 . Then, 8 students were categorized as Enough (44%). They reach a score in the range of 50 – 59. Continually, 8 students were categorized as Good (44%). They reach a score in the range of 60 – 79. Whereas, there were no students who reach the Excellent Category in answering LOTS-based reading questions. Based on the explanation, the student's average score in answering LOTS-based reading questions was 56. As a result, it is possible to conclude that the students' ability to answer LOTS-based reading questions is Enough. The categories of students' abilities to answer LOTS-based reading questions are shown in Table 2.

Data analysis showed 8 students were categorized as Poor (44%) in answering HOTS-based reading questions. They reach a score ≤ 39 . Then, 2 students were categorized as Enough (11%). They reach a score in the range of 50 – 59. Continually, 3 students were categorized as Good (17%). They reach a score in the range of 60 – 79. Last, 5 students were Excellent at answering HOTS-based reading questions. They reach a score in the range of 80 – 100. Based on the explanation, the student's average score in answering HOTS-based reading

questions was 53. As a result, it is possible to conclude that the students' ability to answer HOTS-based reading questions is Enough. Table 3 shows the categories of students' abilities to solve HOTS-based reading questions.

Table 2. The Students' Ability in Answering LOTS based Reading Questions

No.	Score	Students	Percentage (%)	Category
1.	80 – 100	0	0%	Excellent
2.	60 – 79	8	44%	Good
3.	50 – 59	8	44%	Enough
4.	≤ 39	2	11%	Poor

Table 3. The Students' Ability in Answering HOTS Based Reading Questions

No.	Score	Students	Percentage (%)	Category
1.	80 – 100	5	28%	Excellent
2.	60 – 79	3	17%	Good
3.	50 – 59	2	11%	Enough
4.	≤ 39	8	44%	Poor

In this phase, the result of the difference in students' ability to answer LOTS and HOTS reading questions was decreased, constant, and increased. In answering LOTS and HOTS reading questions, 11 out of 18 students received a decreasing score, 2 out of 18 students had a constant score, and 5 out of 18 students received an increasing score. It can be assumed that the number of students answering LOTS reading questions is higher than HOTS reading questions. Furthermore, students' average score in answering LOTS reading questions is 56, while their ability to answer HOTS reading questions is 53. It indicates that the difference in the students' ability to answer LOTS and HOTS reading questions is as wide as it appears. Students' LOTS and HOTS in Answering Reading Questions showed in Table 4.

Table 4. Students' LOTS and HOTS in Answering Reading Questions

No.	Score	Number of Students		Percentage		Category
		LOTS	HOTS	LOTS	HOTS	
1	80 – 100	0	5	0%	28%	Excellent
2	60 – 79	8	3	44%	17%	Good
3	50 – 59	8	2	44%	11%	Enough
4	≤ 39	2	8	11%	44%	Poor
Mean Score out of 100		56	53			

Discussion

The results showed differences in students' abilities in answering LOTS and HOTS reading questions. Students should think well to achieve learning goals (Ani Rahmawati, Nur Lailatin Nisfah, 2019; Kusuma et al., 2017). Moreover, students are currently required to have critical thinking skills, communication, collaboration, and creativity to compete (Mustika & Susanti, 2020; Suherman et al., 2020). These abilities must be trained properly by students so that they have better abilities. Therefore, teachers must design good learning activities in the classroom. Effective learning activities will prepare students to receive information from the teacher to practice their thinking skills (Afriyanti et al., 2021; Hamdi et al., 2018). In addition, other activities that must be prepared are assessments. Assessment can be said as an action in making a decision (Novika Auliyana et al., 2018; Tiara & Sari, 2019). In addition, the assessment also helps teachers discover students' knowledge and skills after participating in learning activities. Assessment is used to evaluate student's progress and determine how well they have mastered certain subjects (Krismony et al., 2020; Sukmasari & Rosana, 2017). One of them measures students' thinking skills.

Based on the assessment criteria, the results of this study indicate that the differences in students' abilities in answering LOTS and HOTS reading questions are at Enough level. Findings from student responses to LOTS and HOTS-based reading questions use LOTS and HOTS indicators to assess students' ability to answer LOTS and HOTS-based reading questions (Jelita & Putra, 2021; Laksana, 2017). Lower-order thinking skills include remembering, understanding, and applying (Surya et al., 2018). On the other hand, higher-order thinking skills are classified into three categories: analyzing, evaluating, and creating (Anwar et al., 2020; Apino & Retnawati, 2017; Zulfiani et al., 2020). This study uses LOTS and HOTS to classify students' ability to answer reading questions. With these low-level thinking skills, students can usually only remember and interpret

information, including C1, C2, and C3. Higher order thinking skills (HOTS) present critical thinking skills to students, which include the ability to analyze (C4), evaluate (C5), and create (C6) (HOTS) (Husamah et al., 2018; Musliha et al., 2021).

Motivation, students' attitudes in the EFL class, and reading strategies affect language learning. Vocabulary knowledge, prior knowledge, meta-cognitive information, and reading methods affect students' reading competence. Teachers incorporating higher-order thinking skills in teaching and learning will provide students with experience, especially higher-order thinking skills. The findings of previous studies also state that students' higher-order thinking skills can be trained by teachers (Hassan et al., 2016; Ibrahim et al., 2020; Seibert, 2021). Other findings also state that effective learning activities can improve students' higher-order thinking skills (Sari et al., 2020; Suherman et al., 2020; Suratmi et al., 2020). English teachers should provide a lot of practice and training to students in dealing with LOTS and HOTS questions, especially in answering reading questions. Students must be able to answer various LOTS and HOTS questions.

4. CONCLUSION

The student's ability to answer reading questions based on LOTS and HOTS was categorized as Enough. The average score of Students' LOTS and HOTS in answering reading questions was 56 and 53. The English teacher should provide a lot of practice and training for the students dealing with LOTS and HOTS questions.

5. REFERENCES

- Abosalem, Y. (2016). Assessment techniques and students' higher-order thinking skills. *International Journal of Secondary Education*, 4(1), 1–11. <https://doi.org/10.11648/j.ijsedu.20160401.11>.
- Afriyanti, M., Suyatna, A., & Viyanti. (2021). Design of e-modules to stimulate HOTS on static fluid materials with the STEM approach. *Journal of Physics: Conference Series*, 1788(1). <https://doi.org/10.1088/1742-6596/1788/1/012032>.
- Alavi, S. M., & Akbarian, I. (2020). The role of vocabulary size in predicting performance on TOEFL reading item types. *System*, 40(3). <https://doi.org/10.1016/j.system.2012.07.002>.
- Alnofal, A. (2018). Cognitive Levels in Saudi EFL Teachers' and Textbook Questions. *Journal of Language Teaching and Research*, 9(4). <https://doi.org/10.17507/jltr.0904.04>.
- Ani Rahmawati, Nur Lailatin Nisfah, S. K. (2019). The Capability Analysis of High Order Thinking Skills (HOTS) on Dynamic Electricity Material in Junior High School. *JPPPF: Jurnal Penelitian dan Pengembangan Pendidikan Fisika*, 5(3). <https://doi.org/10.21009/1.05211>.
- Anrasiyana, A., Sulistyarningsih, S., & Syakur, A. (2022). Creating Vlog as Media in English Language Teaching (ELT): Teaching Speaking. *Journal Basicedu*, 6(2). <https://doi.org/10.31004/basicedu.v6i2.2575>.
- Anwar, Y., Selamat, A., Huzairah, S., & Madang, K. (2020). Training in developing higher-order thinking based online test instrument for biology teachers in Sekayu City. *Journal of Community Service and Empowerment*, 1(3), 150–155. <https://doi.org/10.22219/jcse.v1i3.12241>.
- Apino, E., & Retnawati, H. (2017). Developing Instructional Design to Improve Mathematical Higher Order Thinking Skills of Students. *Mathematics, Science, and Computer Science Education International Seminar IOP*, 182. <https://doi.org/10.1088/1742-6596/812/1/012100>.
- Astuti, A. P., Aziz, A., Sumarti, S. S., & Bharati, D. A. L. (2019). Preparing 21st Century Teachers: Implementation of 4C Character's Pre-Service Teacher through Teaching Practice. *Journal of Physics: Conference Series*, 1233(1), 012109. <https://doi.org/10.1088/1742-6596/1233/1/012109>.
- Battisti, S., Agarwal, N., & Brem, A. (2022). Creating new tech entrepreneurs with digital platforms: Meta-organizations for shared value in data-driven retail ecosystems. *Technological Forecasting and Social Change*, 175. <https://doi.org/10.1016/j.techfore.2021.121392>.
- Bodrud-Doza, M., Shammi, M., Bahlman, L., Islam, A. R. M., & Rahman, M. (2020). Psychosocial and socio-economic crisis in Bangladesh due to COVID-19 pandemic: a perception-based assessment. *Frontiers in public health*, 8, 341. <https://doi.org/10.3389/fpubh.2020.00341>.
- Dahlan, D., Permana, L., & Oktariani, M. (2020). Teacher's competence and difficulties in constructing hots instruments in economics subject. *Cakrawala Pendidikan*, 39(1), 111–119. <https://doi.org/10.21831/cp.v39i1.28869>.
- Eugenia, Raymond, & Leung, W. N. (2013). Ready for 21st-century Education – Pre-service Music Teachers Embracing ICT to Foster Student-centered Learning. *Procedia - Social and Behavioral Sciences*, 73. <https://doi.org/10.1016/j.sbspro.2013.02.047>.
- Fatimahtuzzahroh, A. M., Mustadi, A., & Wangid, M. N. (2021). Implementation HOTS Based-Learning during Covid-19 pandemic in Indonesian Elementary School. *Jurnal Pendidikan Progresif*, 11(1).

- <https://doi.org/10.23960/jpp.v11.i1.202109>.
- Gilakjani, A. P. (2017). A Review of the Literature on the Integration of Technology into the Learning and Teaching of English Language Skills. *International Journal of English Linguistics*, 7(5), 95. <https://doi.org/10.5539/ijel.v7n5p95>.
- Gottzén, L., & Sandberg, L. (2017). Creating safe atmospheres? Children's experiences of grandparents' affective and spatial responses to domestic violence. *Children's Geographies*, 3285, 1–13. <https://doi.org/10.1080/14733285.2017.1406896>.
- Hamdi, S., Suganda, I. A., & Hayati, N. (2018). Developing higher-order thinking skill (HOTS) test instrument using Lombok local cultures as contexts for junior secondary school mathematics. *Research and Evaluation in Education*, 4(2), 126–135. <https://doi.org/10.21831/reid.v4i2.22089>.
- Hassan, S. R., Rosli, R., & Zakaria, E. (2016). The Use of i-Think Map and Questioning to Promote Higher-Order Thinking Skills in Mathematics. *Creative Education*, 07(07), 1069–1078. <https://doi.org/10.4236/ce.2016.77111>.
- Husamah, Fatmawati, D., & Setyawan, D. (2018). OIDDE learning model: Improving higher order thinking skills of biology teacher candidates. *International Journal of Instruction*, 11(2), 249–264. <https://doi.org/10.12973/iji.2018.11217a>.
- Hyder, I., & Bhamani, S. (2016). Bloom's Taxonomy (Cognitive Domain) in Higher Education Settings: Reflection Brief. *Journal of Education and Educational Development*, 3(2), 288. <https://doi.org/10.22555/joeeed.v3i2.1039>.
- Ibrahim, I., Kuswidi, I., & Arfinanti, N. (2020). Development of a Guide to Preparation of Mathematics Questions Based on Higher Order Thinking Skills and Strengthening Character Education for Middle School Teachers. *Jurnal Fourier*, 9(1). <https://doi.org/10.14421/fourier.2020.91.35-42>.
- Ichsan, I. Z., Sigit, D. V., Miarsyah, M., Ali, A., Arif, W. P., & Prayitno, T. A. (2019). HOTS-AEP: Higher order thinking skills from elementary to master students in environmental learning. *European Journal of Educational Research*, 8(4), 935–942. <https://doi.org/10.12973/eu-jer.8.4.935>.
- Jansen, T., & Möller, J. (2022). Teacher judgments in school exams: Influences of students' lower-order-thinking skills on the assessment of students' higher-order-thinking skills. *Teaching and Teacher Education*, 111. <https://doi.org/10.1016/j.tate.2021.103616>.
- Jelita, A., & Putra, E. D. (2021). Analisis Kesulitan Pembelajaran Tematik Pada Siswa Kelas IV Sekolah Dasar Negeri. *QALAMUNA: Jurnal Pendidikan, Sosial, dan Agama*, 13(2), 429–442. <https://doi.org/10.37680/qalamuna.v13i2.1010>.
- Kembara, Rozak, & Hadian. (2018). Research-based Lectures to Improve Students' 4C (Communication, Collaboration, Critical Thinking, and Creativity) Skills. *Proceedings of the Second Conference on Language, Literature, Education, and Culture (ICOLLITE)*, 1(1). <https://doi.org/10.2991/icollite-18.2019.50>, . 20019.11.
- Krismony, N. P. A., Parmiti, D. P., & Japa, I. G. N. (2020). Pengembangan Instrumen Penilaian Untuk Mengukur Motivasi Belajar Siswa SD. *Jurnal Ilmiah Pendidikan Profesi Guru*, 3(2), 249. <https://doi.org/10.23887/jippg.v3i2.28264>.
- Kusuma, I. P. I., Adnyani, N. L. D. S., & Taharyanti, G. A. P. (2017). Developing 10 interesting games as alternatives to the monotonous use of flashcard for vocabulary learning and assessment. *Script Journal: Journal of Linguistic and English Teaching*, 2(1), 68. <https://doi.org/10.24903/sj.v2i1.65>.
- Kusuma, M. D., Abdurrahman, Rosidin, U., & Suyatna, A. (2017). The Development of Higher Order Thinking Skill (HOTS) Instrument Assessment in Physics Study. *Journal of Research & Method in Education*, 7. <https://doi.org/10.9790/7388-0701052632>.
- Kwangmuang, P., Jarutkamolpong, S., Sangboonraung, W., & Daungtod, S. (2021). The development of learning innovation to enhance higher order thinking skills for students in Thailand junior high schools. *Heliyon*, 7(6). <https://doi.org/10.1016/j.heliyon.2021.e07309>.
- Laksana, S. D. (2017). Improving The Quality Of Learning Mathematics Through Innovative Learning Media. *Jurnal Pendidikan dan Pengajaran*, 50(2). <https://doi.org/10.23887/jpp.v50i2.11658>.
- Lau, K. H., Lam, T., Kam, B. H., Nkhoma, M., Richardson, J., & Thomas, S. (2018). The role of textbook learning resources in e-learning: A taxonomic study. *Computers and Education*, 118, 10–24. <https://doi.org/10.1016/j.compedu.2017.11.005>.
- Martínez-Sierra, G., García-García, J., Valle-Zequeida, M., & Dolores-Flores, C. (2020). High School Mathematics Teachers' Beliefs About Assessment in Mathematics and the Connections to Their Mathematical Beliefs. *International Journal of Science and Mathematics Education*, 18(3), 485–507. <https://doi.org/10.1007/s10763-019-09967-2>.
- Meihami, H., & Razmjoo, S. A. (2016). An emic perspective toward challenges and solutions of self- and peer-assessment in writing courses. *Asian-Pacific Journal of Second and Foreign Language Education*, 1(9), 1–20. <https://doi.org/10.1186/s40862-016-0014-7>.

- Meyer, M. W. (2020). Changing design education for the 21st Century. *She Ji: The Journal of Design, Economics, and Innovation*, 6(1), 13–49. <https://doi.org/10.1016/j.sheji.2019.12.002>.
- Mubarok, H., & Anggraini, D. M. (2020). Literation Skill To Improve Higher-Order Thinking Skills In Elementary School Students. *Al-Bidayah: jurnal pendidikan dasar Islam*, 12(1), 31–42. <https://doi.org/10.14421/AL-BIDAYAH.V12I1.234>.
- Musliha, S., Sudana, D., & Wirza, Y. (2021). The analysis of higher-order thinking skills (HOTS) in the test questions constructed by English teachers. *International Conference on Language, Literature, Culture, and Education*. <https://doi.org/10.2991/assehr.k.211119.095>.
- Mustika, S. W., & Susanti. (2020). Pengembangan lembar kerja peserta didik (LKPD) berbasis Higher Order Thinking Skill (HOTS) praktikum akutansi lembaga. *Jurnal Pendidikan Ekonomi*, 13(2), 409–414. <https://doi.org/10.17977/UM014v13i22020p125>.
- Novika Auliyana, S., Akbar, S., & Yuniastuti. (2018). Penerapan Pembelajaran Tematik Terpadu di Sekolah Dasar. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, 3(12), 1572–1582. <https://doi.org/10.17977/jptpp.v3i12.11796>.
- Nugraha, C. A., & Wahyono, S. B. (2019). Developing Interactive Multimedia Learning for Psychomotor Domain to Students of Vocational High School. *Jurnal Kependidikan: Penelitian Inovasi Pembelajaran*, 3(2), 220–235. <https://doi.org/10.21831/jk.v3i2.21797>.
- Pourhosein Gilakjani, A., & Sabouri, N. B. (2016). A study of factors affecting EFL learners' reading comprehension skills and the strategies for improvement. *International Journal of English Linguistics*, 6(5). <https://doi.org/10.5539/ijel.v6n5p180.e>.
- Renandya, W. A. (2013). Essential factors affecting EFL learning outcomes. *English Teaching*, 68(4). <https://doi.org/10.15858/engtea.68.4.201312.23>.
- Riadi, I. K., & Tantra, D. K. (2020). Students' reading competency on higher-order thinking items in the junior high schools. *Journal of Education Research and Evaluation*, 4(3). <https://doi.org/10.23887/jere.v4i3.27621>.
- Sari, N. M., Pamungkas, A. S., & Alamsyah, T. P. (2020). Pengembangan Lembar Kerja Peserta Didik Matematika Berorientasi Higher Order Thinking Skills Di Sekolah Dasar. *SJME (Supremum Journal of Mathematics Education)*, 4(2), 106–123. <https://doi.org/10.35706/sjme.v4i2.3406>.
- Seibert, S. A. (2021). Problem-based learning: A strategy to foster generation Z's critical thinking and perseverance. *Teaching and Learning in Nursing*, 16(1). <https://doi.org/10.1016/j.teln.2020.09.002>.
- Shih, Y.-C., & Reynolds, B. L. (2015). Teaching Adolescents EFL by Integrating Think-Pair-Share and Reading Strategy Instruction: A Quasi-Experimental Study. *RELC Journal*, 6(1). <https://doi.org/10.1177/0033688215589886>.
- Siddiq, F., Hatlevik, O. E., Olsen, R. V., Throndsen, I., & Scherer, R. (2019). Taking a future perspective by learning from the past – A systematic review of assessment instruments that aim to measure primary and secondary school students' ICT literacy. *Educational Research Review*, 16. <https://doi.org/10.1016/j.edurev.2016.05.002>.
- Songkram, N. (2015). E – learning system in virtual learning environment to develop creative thinking for learners in higher education. *Procedia - Social and Behavioral Sciences*, 174, 674–679. <https://doi.org/10.1016/j.sbspro.2015.01.600>.
- Sudana, I. M., Pathmantara, S., Febiharsa, D., & Gandisa, B. (2020). The Use Of An Information System To Manage Vocational Assessment In Facing The 5 . 0 Digital Society. *Jurnal Pendidikan Teknologi dan Kejuruan*, 26(2), 149–154. <https://doi.org/10.21831/jptk.v26i2.29924>.
- Suherman, Prananda, M. R., Proboningrum, D. I., Pratama, E. R., Laksono, P., & Amiruddin. (2020). Improving Higher Order Thinking Skills (HOTS) with Project Based Learning (PjBL) Model Assisted by Geogebra. *Journal of Physics: Conference Series*, 1467(1), 012027. <https://doi.org/10.1088/1742-6596/1467/1/012027>.
- Sukmasari, V. P., & Rosana, D. (2017). Pengembangan penilaian proyek pembelajaran IPA berbasis discovery learning untuk mengukur keterampilan pemecahan masalah. *Jurnal Inovasi Pendidikan IPA*, 3(1), 101–110. <https://doi.org/10.21831/jipi.v3i1.10468>.
- Suratmi, Laihat, Asnimar, & Ela Okta Handini. (2020). Teachers understanding of HOTS based assessment in elementary schools. *The 2nd International Conference on Elementary Education*, 2(23), 1157–1164.
- Surya, A., Sularmi, S., Istiyati, S., & Prakoso, R. F. (2018). Finding Hots-Based Mathematical Learning in Elementary School Students. *Social, Humanities, and Educational Studies (SHEs): Conference Series*, 1(1), 30–37. <https://doi.org/10.20961/shes.v1i1.24308>.
- Syahdanis, J. D., Sofyan, D., & Yunita, W. (2021). Analysis of HOTS in English teacher-made test. *Jurnal Bahasa dan Sastra Inggris*, 8(2). <https://doi.org/10.33884/basisupb.v8i2.4479>.
- Tiara, S. K., & Sari, E. Y. (2019). Analisis Teknik Penilaian Sikap Sosial Siswa Dalam Penerapan Kurikulum 2013 Di Sdn 1 Watulimo. *EduHumaniora | Jurnal Pendidikan Dasar Kampus Cibiru*, 11(1), 21.

- <https://doi.org/10.17509/eh.v11i1.11905>.
- Widiana, I. W., & Rendra, N. T. (2020). The Effectiveness of the Learning Model Oriented Towards the Dimensions of Knowledge and Cognitive Processes. *Journal of Education Research and Evaluation*, 4(4), 304. <https://doi.org/10.23887/jere.v4i4.30041>.
- Widyaningsih, S. W., Yusuf, I., Prasetyo, Z. K., & Istiyono, E. (2020). Online Interactive Multimedia Oriented to HOTS through E-Learning on Physics Material about Electrical Circuit. *JPI (Jurnal Pendidikan Indonesia)*, 9(1), 1–14. <https://doi.org/10.23887/jpi-undiksha.v9i1.17667>.
- Wu, W. H., Kao, H. Y., Wu, S. H., & Wei, C. W. (2019). Development and evaluation of affective domain using student's feedback in entrepreneurial Massive Open Online Courses. *Frontiers in Psychology*, 10(MAY). <https://doi.org/10.3389/fpsyg.2019.01109>.
- Zulfiani, Suwarna, I. P., & Sumantri, M. F. (2020). Science adaptive assessment tool: Kolb's learning style profile and student's higher order thinking skill level. *Jurnal Pendidikan IPA Indonesia*, 9(2), 194–207. <https://doi.org/10.15294/jpii.v9i2.23840>.