

# Need Analysis of Instruments Assessment of Curriculum 2013 Based on Higher Order Thinking Skills (HOTS) for Elementary School Students

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## ABSTRACT

This article aims to explain the results of the HOTS based assessment instrument needs analysis. HOTS-based assessment instruments are considered important to be understood by teachers in elementary schools (SD) and support the 2013 curriculum. The results of the analysis were obtained from the distribution of questionnaires using google form and the results of discussions with lecturers in mathematics courses in the elementary education FKIP Unsri study program. The questionnaire distributed using google form was filled in by 79 elementary school teachers, then analyzed using descriptive analysis. Discussion of the objects of study in this article are 1) assessment instruments, 2) 2013 curriculum and 3) HOTS. This needs analysis results in 1) the importance of knowledge in the HOTS-based 2013 curriculum assessment, 2) teachers in elementary schools need an assessment instrument in the HOTS-based 2013 curriculum. Thus, it can be concluded that the HOTS-based 2013 curriculum assessment instrument for elementary school students needs to be developed.

**Keywords:** *Need analysis, Assessment instrument, 2013 curriculum, HOTS.*

## 1. INTRODUCTION

Curriculum 2013 in which there is a demand that it is necessary to develop higher order thinking skills or HOTS of students starting from elementary school. However, in reality it has not been fully implemented in schools. The results of research by Rapih and Sutaryadi [1] stated that as many as 11.43% of teachers thought that HOTS could not be started being taught to elementary school students. Whereas according to Usmaedi [2] HOTS should have started being taught and trained as early as possible. HOTS is a thinking ability that adjusts a person's cognitive level. Students at elementary school age must be introduced to HOTS according to their cognitive development at that age. Higher order thinking skills when viewed from the cognitive domain in Bloom's taxonomy are at the level of analyzing, evaluating and creating.

Ahmad et.al. [3] explain that the ability to analyze which is the fourth level in Bloom's taxonomy, namely the ability to separate a material into components to see the relationship of parts and their suitability is often referred to as the beginning of HOTS, while synthesis is the ability to combine parts. -part becomes a new whole

is an ability pleasing to creativity. Thus it can be concluded that creativity is one of the HOTS variables

The 2013 curriculum refinement was carried out, among others, on content standards, namely reducing irrelevant material as well as deepening and expanding relevant material for students and enriched with the needs of students to think critically and analytically according to international standards. Other improvements have also been made to the assessment standards, by providing room for the development of assessment instruments that measure higher-order thinking. Assessment of learning outcomes is expected to help students to improve higher order thinking skills (HOTS), because high-order thinking can encourage students to think broadly and deeply about the subject matter.

Higher order thinking occur when someone takes new information and information saved in memory and related each other and expands this information to reach the goal or finding the possible answer in a confusing situation. Higher Order Thinking can achieve various goals. Deciding what should be believed; determining what should be done; creating a new idea, a further

object, or artistic expression; making a prediction, and solving a problem.

Thinking is a person's mental process to solve problems or achieve certain goals that connect ideas and facts [4]. After the thought process a person gets a conclusion from the results of his thoughts. Humans are required to think throughout life in order to solve problems. Including the elementary school period [5]. "thinking is a psychological process that links or compares situations of facts, ideas or events with facts, ideas or other events [6].

Thinking is part of the cognitive domains which Bloom calculates into six levels of cognitive processes: knowledge (knowledge); comprehension; application (application); analyze (analysis); assess (evaluation); and create (create) [7]. High-level thinking is a type of thinking that tries to explore questions about existing knowledge related to issues that are not clearly defined and do not have a definite answer [8]. The implementation of Higher Order Thinking Skills (HOTS) in learning is one form of learn to think. HOTS can be done in four stages, namely organizational thinking, analytical thinking, evaluative thinking and creative thinking [9][10].

So far in part Most of the Elementary School teachers for the 2013 curriculum target tend to still measure lower order thinking skills (LOTS) and the questions are not contextual. The questions compiled by the teacher generally measure recall skills. When viewed from the context, most of them use the context in the classroom and are very theoretical, and rarely use the context outside the classroom. So that it does not show the relationship between the knowledge gained in learning with real situations in everyday life.

[11] both are wondering if there is a difference between lower-order and higher-order thinking skills. In fact, the term "higher order" thinking skills seems a misnomer in that it implies that there is another set of "lower order" skills that need to come first. Higher order thinking skills need to be mastered and accustomed to in school learning so that students can be trained to solve difficult problems in their lives [12-15]. Through these thinking skills students are expected to be able to find new things and creative and innovative ideas in the face of changing times.

High-order thinking skills are needed by everyone in facing the demands of 21st century skills, therefore education should focus on mastering competencies which include thinking, working, living and mastering technology competencies [16].

The subject matter is sought to be oriented towards HOTS with problem-based learning and the evaluation system has been designed so that students are not only trained to answer low-level questions such as knowing (C-1), understanding (C-2), applying (C-3), but also

higher levels of thinking such as analyzing (C-4), evaluating (C-5) and creating (C-6) [17]. The aim of the curriculum change is not only to pursue PISA rankings, but more importantly to prepare students for increasingly tough global competition. Changes and developments in the world in the field of information technology are accelerating, giving birth to new erratic eras. All these changes must be prepared, especially in the field of education, so that when they become adults, students can have adequate competency and thinking skills. One of the very important thinking skills for students to master is higher order thinking skills [12]

[18] Teachers in schools make test questions not to measure students' thinking skills but merely measure the achievement of learning objectives. Thinking skills are divided into lower order thinking skills (LOTS) and higher order thinking skills (HOTS).

Reflections on the results of the 2009 Program International for Student Assessment (PISA) show that the thinking ability of Indonesian students is still low. Indonesian students only master lessons up to level 3, while other countries have reached levels 4, 5 and even 6. In addition, the PISA results in 2000 Indonesia's ranking for science is 38 out of 41 countries, in 2006 it is 52 out of 57 countries, in 2009 was 61 out of 65 countries, in 2012 it was 64 out of 65 countries, in 2015 it was 62 out of 72 countries [19].

Since the 2013 curriculum was implemented, teachers have known that it is important for students to have HOTS and also the importance of teachers in training and accustoming HOTS-based learning. This teacher's awareness needs support with reading sources or handbooks on HOTS. Teachers' knowledge of students to find out to what extent the HOTS level of students is, of course the teacher has HOTS-based assessment instructions. This is expected so that teachers can evaluate the location of shortcomings or plans that will be carried out next to increase HOTS. [20] states that higher-order thinking is part of the bloom taxonomy. The purpose of teaching in taxonomy is for teachers to be able to make the process of transferring knowledge.

Based on the level of objectivity of the scoring, the form of tests given to students is divided into two types of tests, namely objective and subjective tests. Objective tests include matchmaking, true - false, and multiple-choice tests. Meanwhile, subjective tests include essay tests and short questions [21]. Based on this background, this article discusses the analysis of the need for a HOTS-based 2013 curriculum assessment instrument at elementary School.

## **2. METHOD**

This study used a qualitative descriptive study with a survey method which was conducted from August 2020

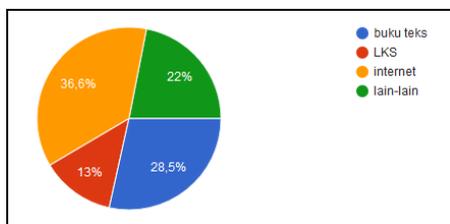
to September 2020. The research sample was elementary school teachers in South Sumatra and Bangka Belitung with a total of 79 teachers. Data analysis was carried out in three stages, namely data collection, data presentation and conclusion [22].

Data collection techniques using a questionnaire (google form). This questionnaire data was used to get a response to the need for a HOTS-based 2013 curriculum assessment instrument. The results of the study used a research stage that only discussed the analysis of the needs of the HOTS-based 2013 curriculum assessment instrument. From this stage, further research will be produced, namely the development of the assessment instrument.

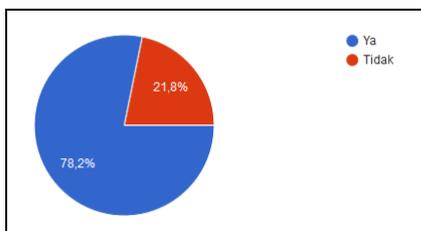
### 3. RESULT AND DISCUSSION

#### 3.1. Result

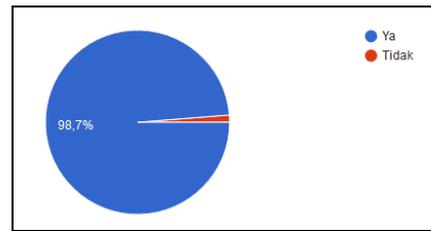
Based on the results of the questionnaire data, the percentage of elementary school teachers who stated that using other sources (internet, etc.), in making or looking for HOTS-based 2013 Curriculum assessment instruments can be seen in Figure 1. The percentage of elementary school teachers who stated that they had difficulty teaching material related to HOTS, can be seen in figure 2. The percentage of elementary school teachers who stated that they needed HOTS-based 2013 curriculum assessment instruments for students in elementary schools, can be seen in Figure 3.



**Figure 1.** Percentage of elementary school teachers who state that they use other sources (internet, etc.), in making or searching for HOTS-based 2013 Curriculum assessment instruments.



**Figure 2.** Percentage of elementary school teachers who said they had difficulties in the HOTS-based 2013 curriculum assessment



**Figure 3.** Percentage of elementary school teachers who stated that they needed HOTS-based 2013 curriculum assessment instruments for students in elementary schools.

#### 3.2. Discussion

The results of the analysis of the need for HOTS-based assessment instruments for students in elementary schools were taken from questionnaire data filled in by 79 elementary school teachers in South Sumatra and Bangka, it was found that in Figure 1. the percentage stated that using other sources in making the HOTS-based 2013 curriculum assessment instrument was as many as 36.6% obtained from the internet, 28.5% from text books, 13% from student worksheets and 22% answered others. This shows that there are no specific guidelines regarding the HOTS-based 2013 curriculum assessment instrument in elementary schools.

[23] which state that the teaching materials provided by the central government have not fully met the needs of developing high-level thinking learning for students in the regions, so a teacher must complete teaching materials according to the characteristics and needs of students in their respective regions.

Furthermore, Diagram 2 shows that 78.2% of elementary school teachers experienced difficulties in carrying out the HOTS-based 2013 curriculum assessment. The percentage of diagram 2 is related to diagram 1 which shows that there are no specific guidelines for teachers in providing HOTS-based 2013 curriculum assessments. From the two percentages, it is shown that elementary school teachers need HOTS-based 2013 curriculum instruments, namely the percentage obtained is 98.7%.

Of the 3 diagrams that illustrate the percentage of statements from the questionnaire data above, there are seven more percentages of the statements in the questionnaire that have been answered by elementary teachers. The results of this questionnaire were divided into two groups. The first group stated that elementary school teachers already know about HOTS, among others, the form of questions, differences in assessment with ordinary questions, the importance of understanding and knowledge of the HOTS-based 2013 curriculum assessment instrument, the 2013 curriculum assessment has been applied by several elementary

schools, supporting teaching materials for train elementary students' HOTS skills. The second group stated that elementary school teachers still experienced difficulties in teaching related to HOTS abilities to students, students in elementary schools experienced difficulties in learning things related to HOTS abilities, and elementary teachers needed examples of HOTS-based 2013 curriculum assessment instruments for SD easier and more attractive.

As for the percentage for the first group, 94.9% of elementary school teachers already know about HOTS abilities, HOTS assessment instruments with different ordinary assessment instruments have been known to elementary school teachers as much as 74.7%, elementary teachers answered that HOTS-based assessment instruments have been applied in some elementary schools for 63.3%, the percentage of 59% of the teachers answered that the teaching materials supported the HOTS abilities of students in SD. While the second group, namely 78.2% of teachers answered that they still had difficulties in teaching related to HOTS abilities, 82.3% of teachers also answered that students had difficulty solving math problems related to HOTS, and 97.5% of teachers answered that they needed examples of instruments HOTS-based assessment in SD is easier and more practical.

From the results of the questionnaire, it was found that elementary school teachers already know the importance of HOTS in students and are accustomed to learning in SD, but the difficulty in training students to have HOTS is still experienced by the teacher. [24] states that the main goal of HOTS is how to improve the thinking skills of students at a higher level, especially those related to the ability to think critically in receiving various types of information, think creatively in solving problems using their knowledge and make decisions in complex situations

Teachers consider higher-order thinking skills as high order thinking that occurs when the student obtains new knowledge and stores it in his memory, then this knowledge is correlates, organized, or evaluated to achieve a specific purpose [11]. HOTS application in the learning process is very important. Students not only get subject matter from themselves but also about life skills, for example in finding solutions to problems at hand in real life such as family, friends, and society in a wider scope [25].

The ability to think critically, think at high levels and creatively in students' needs to be accustomed to given through learning by teachers in elementary schools, but from the position of the teacher also experiences obstacles, namely difficulty in training through HOTS-based learning. Another obstacle that the teacher has is in the assessment that does not have guidelines or instructions for HOTS-based assessments. [26] in his research stated that one way to find out

whether students already have high-order thinking skills is by doing an assessment. This assessment is a HOTS-based assessment.

As a teacher, the teacher must prepare students to be able to compete in the industrial revolution 4.0 by getting students used to the ability to think at a high level and also be able to make good [27]. [28] assessment instruments can also be called assessment techniques divided into two forms, namely the form of tests and non-test forms. Based on the expert opinion above, it was concluded that the assessment instrument characterized by HOTS is a technique or tool that can measure a person's high-level thinking skills using either a test or non-test form.

[29] authentic assessment or authentic assessment is a real mirror or the real mirror of student learning conditions. Teachers are required to be able to develop questions that can describe the real condition of students or authentic assignments.

The success of assessment process depends on the selection and use of appropriate and effective procedures, as well as on the correct interpretation of student achievement [30]. The lacking and the unavailability of the assessment instrument designed specifically to practice HOTS is the major problem [31].

Based on the survey results, then in supporting the 2013 curriculum it is deemed necessary to develop a HOTS assessment instrument in elementary schools. The results of this study can be used as further research as material for developing HOTS-based 2013 curriculum instruments in elementary schools.

#### **4. CONCLUSION**

Based on the results of the survey obtained, it can be concluded that elementary school teachers have problems related to the HOTS-based 2013 curriculum assessment instrument, namely the unavailability of the HOTS-based 2013 curriculum assessment instrument and the difficulty of elementary school teachers in teaching material related to HOTS. The assessment instrument that needs to be developed in elementary schools is the 2013 curriculum based on HOTS.

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#### **REFERENCES**

- [1] Rapih, & Sutaryadi. Perpektif guru sekolah dasar terhadap Higher Order Tinking Skills (HOTS): pemahaman, penerapan dan hambatan. *Premiere Educandum: Jurnal Pendidikan Dasar dan*

- Pembelajaran. Volume 8(1), 2018, pp 78 – 87, Universitas PGRI Maiden. ISSN: 2088-5350 (Print) / ISSN: 2528-5173 (Online) [https://www.researchgate.net/publication/326022030\\_Perpektif\\_guru\\_sekolah\\_dasar\\_terhadap\\_Highe\\_r\\_Order\\_Tinking\\_Skills\\_HOTS\\_pemahaman\\_pene\\_rapan\\_dan\\_hambatan](https://www.researchgate.net/publication/326022030_Perpektif_guru_sekolah_dasar_terhadap_Highe_r_Order_Tinking_Skills_HOTS_pemahaman_pene_rapan_dan_hambatan)
- [2] Usmaedi. Menggagas Pembelajaran Hots Pada Anak Usia Sekolah Dasar. JPSD Vol. 3 No. 1, Maret 2017. ISSN 2540-9093. <http://jurnal.untirta.ac.id/index.php/jpsd/article/view/1040>
- [3] S., Ahmad, et.al. Instrumen HOTS Matematika bagi Mahasiswa PGSD, , in: Jurnal PAJAR (Pendidikan dan Pengajaran) Program Studi Pendidikan Guru Sekolah Dasar ,Vol. 2 No. 6, 2018.
- [4] S. Ramadhan, et.al. The Development of an Instrument to Measure the Higher Order Thinking Skill in Physics, in: *European Journal of Educational Research*. Volume 8, Issue 3, 2019, pp. 743 – 751, DOI: 10.12973/eu-jer.8.3.743.
- [5] A. Lestari,, et.al.. Pengembangan Soal Tes Berbasis HOTS Pada Model Pembelajaran Latihan Penelitian Di Sekolah Dasar.
- [6] Kowiyah. Keterampilan Berpikir Kritis. Jurnal Guruan Dasar Dosen PGSD UHAMKA. 2012.
- [7] L W. Anderson, Pembelajaran, Pengajaran, dan Asesmen, Yogyakarta: Pustaka Pelajar.2019.
- [8] H, Yvonne, Higher Order Thinking And Assessment. International Seminar on current issues in Primary Education: Prodi PGSD Universitas Muhammadiyah Makasar., 2014.
- [9] Usmaedi. Menggagas Pembelajaran HOTS Pada Anak Usia Sekolah Dasar, in: JPSD Vol. 3 No. 1, 2017.
- [10] H. N. Dinni, HOTS (High Order Thinking Skills) dan kaitannya dengan kemampuan literasi matematika. *PRISMA, Prosiding Seminar Nasional Matematika, 1*, 2018, pp.170-176.
- [11] Y. Abosalem, Assessment Techniques and Students’ Higher-Order Thinking Skills, in: *International Journal of Secondary Education*, Vol. 4,No.1, 2016, DOI: 10.11648/j.ijsedu.20160401.11
- [12] A. Widodo, et.al. Analisis Konten HOTS dalam Buku Siswa Kelas V Tema 6 “Panas dan Perpindahannya” Kurikulum in: MADRASAH Jurnal Pendidikan dan Pembelajaran Dasar. Madrasah, Vol. 12 No. 1, 2013, pp. 2, <http://ejournal.uin-malang.ac.id/index.php/madrasah/index>
- [13] N. Chetty, Teaching Teachers to Teach Physics to High School Learners. *Procedia-Social and Behavioral Sciences*, 174, 1886-1899. 2015.
- [14] L. G. Snyder., & M. J Snyder,. Teaching critical thinking and problem solving skills. *The Journal of Research in Business Education*, 50(2), 2008,p. 90.
- [15] G. Ten Dam,, & M. Volman, Critical thinking as a citizenship competence: teaching strategies. *Learning and instruction*, 14(4), 2004, pp. 359-379.
- [16] S. D. Nirmala, Kemampuan berpikir kritis siswa Kelas IV Se-Gugus 2 Purwasari dalam membaca pemahaman melalui model fives dan model guided reading, in: *Dinamika*, 10(2),2019, pp.44–58. DOI: <https://doi.org/10.30595/dinamika.v10i2.3889>
- [17] A.D, Maharani & T.S Utami, HOTS pada Assessment Pembelajaran Tematik Muatan Pembelajaran IPA Siswa Sekolah Dasar. In: *Prosiding Seminar Nasional Pendidikan Dasar*, 2019, pp.502-510.
- [18] P, N Afnia, & E, Istiyono. The Development of Two-Tier Multiple Choice Instruments to Measure Higher Order Thinking Skills Bloomian, in: *Advances in Social Science, Education and Humanities Research*, Atlantis Pers Vol. 397, pp. 1038,
- [19] OECD. PISA 2015.Result in Focus. OECD Publishing. 2016.
- [20] S. M, Brookhart, How to Assess High-er Order Thinking Skills in Your Class-room. Alexandria: ASCD.2010.
- [21] D, Soenardi. Tes Bahasa: Pegangan bagi Pengajar Bahasa (Edisi 2). Jakarta: Indeks.2011.
- [22] Sugiyono. Metode penelitian pendidikan pendekatan kuantitatif, kualitatif, dan R&D. Bandung: Alfabeta. 2013.
- [23] W. Pratiwi,, & J. Alimuddin, Analisis kebutuhan bahan ajar bermuatan keterampilan berpikir tingkat tinggi di Sekolah Dasar. *Elementary School* 6, 6(1), 2019, pp. 27–32.
- [24] S, Hatta. Pengembangan Mutu Pendidikan Menuju Era Global: Penguatan Mutu Pembelajaran dengan Penerapan HOTS (High Order Thinking Skills). Bandung: SMILE’s Publishing. 2106.
- [25] S. Setiawati, Analisis higher order thinking skills (hots) siswa sekolah dasar dalam menyelesaikan Soal bahasa Indonesia, Volume 2 – 2019, in: *Prosiding Seminar Nasional Pendidikan KALUNI*. DOI:<http://dx.doi.org/10.30998/prokaluni.v2i0.143>

- [26] Hanifah. 2019. Pengembangan instrumen penilaian Higher Order Thinking Skill (HOTS) di Sekolah Dasar. Vol. 1 No. 1 Tahun 2019. <https://ejournal.upi.edu/index.php/crecs/article/view/14286/pdf>
- [27] R. Hartono, & T. Pahlevi, Development Of Assessment Instruments Based On HOTS At Surabaya Vocational High School, , in: *JISAE, Universitas Negeri Jakarta*. Volume 6 Number 2 , 2020, pp. 211.
- [28] K. Jannah,, & T. Pahlevi, *Pengembangan Instrumen Penilaian Berbasis Higher Order Thinking Skills Berbantuan Aplikasi “ Kahoot !” Pada Kompetensi Dasar Menerapkan Penanganan Surat Masuk dan Surat Keluar Jurusan OTKP di SMK Negeri 2 Buduran*. 8, 2020, pp.108–121.
- [29] I, Basuki,dkk, *Assessmen Pembelajaran*.Bandung: Remaja Rosdakarya. 2015.
- [30] A. Bordoh,, et.al., P. Social Studies Teachers’ Knowledge Base in Authentic Assessment in Selected Senior High Schools *Sciences and Humanities*, in: the Central Region of Ghana. *Journal of Social*, Vol. 1, No. 3,2015, pp. 249-257,
- [31] M, Puteh, et.al. Developing a secondary mathematics higher order Thinking skills assessment instrument, in: *The turkish online journal of design, art and communication – TOJDAC*. 2018, DOI: 10.7456/1080SSE/166