Development of Learning Tools Based Higher Order Thinking Skills (HOTS) in Special Makeup Course

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Abstract. Higher Order Thinking Skill (HOTS) is an thinking skill at a high level where in the process activities are carried out through analysis, evaluation, creativity and critical. In this case, someone with high thinking has critical thinking, is able to solve problems and provide appropriate solutions, and is able to produce products based on their knowledge. In college learning to improve higher order thinking skills can be done by implementing problem-based learning models with case methods and project-based learning with team-based projects. This has not been implemented in special makeup courses. To improve high-level thinking, teaching tools are needed that are appropriate and support the learning model currently applied. In this study, learning tools were developed in the form of textbooks, HOTS test and semester learning plans. The product development based on the 4D model (define, design, develop, disseminate). The feasibility assessment was executed through expert evaluations, restricted trials, and field tests using experts, lecturers, and students as subjects. The test was measured using measuring instruments in the form of observation sheets, validation sheets, lecturer and student assessment sheets. The validity results indicate that the RPS is classified as very valid category, the ebook is in valid category, and the assessment instrument is also very valid category, with the RPS is 0.8375, the ebook is 0.767 according on the assessment of learning design experts and 0.822917 based on the assessment of learning media experts while the HOTS test instrument is 0.937. According on data processing with statistics, it is concluded that the teaching device is declared valid by experts, practical to use and effective to use to improve high-level skills with an average percentage of 81.7% for students of the Medan State University Cosmetology Education Study Program, especially in the Special Makeup course.

Keywords: Learning Tools, HOTS, Spesial Makeup Course.

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1 Introduction

Learning is the process of student interaction with the environment that can change better behavior. Learning is a system, because it is an activity that consists of goals, materials, methods, tools, evaluations, teachers, and students. Educators act as facilitators who support the improvement of students' learning abilities. In process of learning, it's important that learning tools are available in accordance with the curriculum.

Teaching tools are various teaching resources and materials used by teachers and other educators in an effort to achieve learning outcomes (Kemdikbudrister, 2022). Included in teaching tools are textbooks, teaching modules, learning videos, lesson plans, assessment instruments and other forms. The aim is to help educators who need references or inspiration in teaching.

According to Hasratuddin (2014); Istianah (2013); Suparman (2015) in Agusta (2021) that the 21st century learning process and the industrial revolution 4.0, learning activities are needed that are directed at developing critical thinking skills, using creativity in thinking, problem solving, communication skills, lifelong learning, self-management, new literacies such as technological literacy and much more than that, innovation skills, collaboration with others and leadership. This is in accordance with the education ministry's policy regarding learning with programs that include strengthening character education and learning oriented towards HOTS.

HOTS is an educational framework introduced by Bloom's taxonomy in 1956. Critical thinking skills, or higher-order thinking, involve relational reasoning that connects different representations through inference, comparison, abstraction, and hierarchy (Frausel et al., 2020). Thinking skills in high level in learning process are in form of developing learner competencies in terms of critical thinking, creativity and innovation, communication skills, the ability to work together (collaboration) and self-confidence (confidence). According to King, et al. (Sani, 2019) HOTS are critical thinking, logical thinking, reflective, metacognitive and creative skills. According to Thomas & Thorne (Nugroho, 2018) HOTS is a higher way of thinking than just remembering, and presenting facts or applying procedures, formulas and rules.

HOTS is a thinking ability in domain of cognitive that HOTS is a cognitive thinking process in analyzing, occur and create (pajar et al., 2018; Seri, 2018). This means that HOTS is part of the thinking ability that involves processes in the critical cognitive domain in solving problems.

The learning process at the cognitive, affective and psychomotor levels is a unity in high-level thinking. Critical thinking skills are practiced in learning, applied with worksheets, and supported by learning tools in the form of lesson plans, textbooks and learning media (Saputro, duwi et al., 2021). Bloom's taxonomy encompasses three domains of educational activities: cognitive (knowledge), affective (self-attitude), and psychomotor (manual or physical skills) is relevant for teachers to use in designing learning objectives, determining learning outcomes through operational verbs and classroom assessments. So that before starting learning, teachers need to prepare learning through teaching tools such as lesson plans, teaching books, learning videos, assessment instruments and others. To enhance students'

higher-order thinking skills, educators must create lesson plans that incorporate these skills (Ayu et al., 2022; Saragih & Nasution, 2019). Learning tools designed in improving Higher Order Thinking Skills enable students to acquire unfamiliar knowledge and effectively apply it to novel situations, thereby equipping the younger generation with essential skills to navigate evolving circumstances (Herman et al., 2022; Kurniawan & Yanti, 2022; Syarifuddin et al., 2022).

In higher education, HOTS learning is applied through planning, implementation, and evaluation by lecturers. Learning planning characterized by HOTS can be seen in determining learning objectives, determining learning models and methods, as well as elements in the Learning Implementation Plan (RPP). In developing this lesson plan, instructors must analyze and incorporate elements of the learning environment (Fanny et al., 2021; Mahanani et al., 2022). In the implementation stage of HOTS learning, lecturers choose and apply learning models and methods that familiarize students with higher order thinking. The problem-based learning model, utilizing the case method, and the project-based learning (PjBL) model, employing the team-based project approach, are both effective for fostering higher-order thinking skills (HOTS). Problem-based learning is employed to foster higher-order thinking in problem-oriented contexts, encompassing the acquisition of learning strategies (Maryati, 2018). Problem-Based Learning is effective when the educator devises and executes learning activities that commence with presenting problems to students (Asror, 2018).

Previous research revealed that teachers exhibited varying competencies in developing assessment instruments; specifically, some teachers could create instruments aligned with both LOTS and HOTS categories proportionately, while others were limited to formulating assessments that solely evaluated LOTS. Additionally, there were errors among teachers in accurately determining the cognitive levels of items, particularly at the C4, C5, and C6 tiers (Hartini et al., 2020). The development of the Learning Implementation Design (RPP) is hindered by teachers' inadequate mastery of the foundational material for learning assessment, including the 2013 Curriculum assessment concepts, curriculum analysis, understanding of operational verbs, and proficiency in formulating criteria for non-test assessment types (Kamilati, 2018). In another study, learning evaluations used by teachers only a small portion (14.2%) used operational verbs (KKO) that contained higher-level thinking skills and were dominated (85.8%) by operational verbs (KKO) that led to lower-level thinking skills.

The findings of a study on the application of HOTS-based Problem-Based Learning models in science classes across two distinct schools indicated that the enhancement of students' higher-order thinking skills through problem-solving and collaborative projects was contingent upon supportive factors, specifically the provision of resources by the schools, including media, tools, and infrastructure. Conversely, the failure to increase students' critical thinking is also influenced by inhibiting factors such as the unavailability of insufficient time for teachers to explain the material in depth, inappropriate Learning Implementation Plans, broken LCDs, class mastery by teachers so that not all students can play an active role in learning, insufficient teaching materials so that students cannot solve the problems in the LKS (Lestari at al., 2021).

Special makeup course is one of the practical courses. This course studies various makeup techniques ranging from corrective techniques to character makeup techniques. The learning process in special makeup courses uses the PBL learning model. Researcher interviews and

observations found that the Semester Learning Plan used in the special makeup course was not fully HOTS-based, still using Bloom's Taxonomy KKO in the LOTS dimension; the textbooks used were not HOTS-based and the assessment instruments in the form of exercises (simulation practice) were in the form of descriptions of practice orders, so there were no HOTS tests. Based on researcher interviews and the results of previous studies, no one has discussed learning tools in the field of beauty, especially in the Special Makeup course, so it is important to develop HOTS-based learning tools tailored to the Project Based Learning (PBL) and Project Based Learning (PjBL) models in special makeup courses as a solution to the availability of learning tools to improve student HOTS-based learning.

2 Method

R&D is research method. Developed products is HOTS-based learning tools in the Special Makeup course. The learning tools developed are semester implementation plans (SSP), e-books equipped with video tutorials and assessment instruments in the form of essay tests. This research uses the 4-D model development model developed by Thiagarajan, Semmel, and Semmel which includes: (1) define; (2) design; (3) develop; and (4) disseminate.

Research was conducted from March to September 2023 at the Cosmetology Education Study Program, Medan State University. Trial subjects in this study were experts, lecturers and students of 2021 classes A and B. Subjects for limited trials and field trials were randomly selected. In the limited trial, 2 lecturers and 10 students were selected. The field trial subjects were lecturers and students of 2021 classes A and B totaling 65 people.

The development procedure in this research refers the defining stage, several analysis activities were carried out as a reference for designing the initial product, namely: (1) analyzing the problems in the Special Makeup course and determining alternative problem-solving solutions, (2) analyzing students in terms of student characteristics and academic abilities, (3) analyzing the material by selecting the learning outcomes developed, and (4) determining the indicators of the selected Course Learning Outcomes (CPMK). Furthermore, the initial design of the product refers to the results of the analysis carried out. The result of the initial design is called draft 1.

During the development stage, three trial stages were conducted: expert test, limited trial, and field trial. An expert test was performed to assess the validity of the outcomes from the preliminary design of learning devices (draft 1). Devices that satisfy valid requirements (draft 2) are thereafter subjected to limited trials and field trials. The outcomes of the amended limited study are designated as draft 3, followed by a field trial to assess the efficacy of the produced device. The last stage involves dissemination through the submission of the product to the study program or university conducting the research, along with scholarly publications.

Data collected through of two types, namely test and non-test techniques. The test was carried out by giving instruments to measure students' HOTS, while the non-test was carried out by giving validation sheets, lecturer assessment sheets, student assessment sheets, and observations. The instruments used in this research are validation sheet, lecturer assessment, student assessment, and learning outcome test instrument to measure HOTS. The validity of the device is measured by a validation sheet, namely RPS validation sheet, ebook, and

learning outcome test. The lecturer and student assessment sheets were used to measure the practicality of device and the learning outcome test instrument to measure the effectiveness of the device in terms of students' HOTS.

Data from expert trials were analyzed to determine the validity aspects of the device. Learning tools are said to be valid if on average they meet the valid category. Aiken validity index was used to analyze the device.

Practicality analysis aims to determine whether the learning tools developed meet the criteria of practicality. The device is stated to be practical through data obtained from lecturer assessments and student assessments in limited trials. Learning devices are said to be practical if the category of the results of the analysis of each device is at least practical. The practicality analysis was carried out by converting the data from trial results on a scale of five. The scoring guidelines using a five scale (Liker scale).

Data analysis to calculate the learnin effectiveness is obtained from the percentage of HOTS test results after learning. The steps in analyzing learning device effectiveness data are: (1) tabulating the HOTS scores obtained by students, (2) calculating the number of students achieving a minimum score of 75 (good category), (3) concluding the percentage of students who achieved a minimum score of 75 (good category). In this research, the criteria for teaching devices that are declared effective, if the percentage of student completeness is between 66-79%.

3 Results and Discussion

3.1. Expert Trial Results (Validity Test)

The initial learning device product (draft 1) developed was first carried out an expert test (validation test) which aims to assess the content of the product quality. The learning tools were validated by two experts by assessing the semester learning plan (RPS), ebook and test assessment instrument. The content validity criteria is presented in table 1 below:

Table 1. Classification of Aiken Validity Coefficient (V)

Score Range	Validity Criteria
$0,8 < V \leq 1$	Very Valid (High)
$0,4 < V \leq 0,8$	Fairly Valid (Medium)
$0 < V \leq 0,4$	Less Valid (Low)

Validation data analysis results by validator on RPS are as in Table 2.

Table 2. Semester Learning Plan (RPS) Validation Results

Aspects Assessed	Score		Aiken Index	Validity Criteria
	1	2		
Course Identity	5	5	1	Very Valid
Course Learning Outcomes (CPMK)	5	5	1	Very Valid
Sub - Course Learning	4	4		Fairly Valid

Outcomes (CPMK)			0,75	
HOTS indicator	4	4	0,75	Fairly Valid
Material Suitability	5	5	1	Very Valid
Learning model	4	5	0,875	Very Valid
Learning Activities	4	3	0,625	Fairly Valid
Language Accuracy	4	4	0,75	Fairly Valid
Reference/ source	5	5	1	Very Valid
Assessment of Learning Outcomes	3	4	0,625	Fairly Valid
Total	43	44	0,8375	Very Valid

The assessment of the RPS above shows that each component that makes up the RPS has a very valid category and total average of analysis results also have a very valid category. Furthermore, the assessment results and analysis of validator assessment data (learning design experts and media experts) on ebooks based on aspects of book preparation show that each aspect has quite valid criteria, while the validator assessment data (learning media experts) has very valid criteria. The assessment result and learning design expert to analyze ebook data are reviewed from each aspect as in Table 3 and the assessment by media experts is in Table 4.

Table 3. Validity Test Results of Learning Design Experts on Ebooks

Aspects assessed	Item	Score		Aiken Index	Validity Criteria
		1	2		
Objective	1	5	5	1	Very Valid
	2	5	5	1	Very Valid
Strategy	3	4	3	0,625	Fairly Valid
	4	4	4	0,75	Fairly Valid
	5	4	5	0,875	Very Valid
	6	3	3	0,5	Fairly Valid
	7	4	4	0,75	Fairly Valid
	8	4	4	0,75	Fairly Valid
	9	4	4	0,75	Fairly Valid
	10	5	5	1	Very Valid
Evaluation	11	4	4	0,75	Fairly Valid
	12	5	4	0,875	Very Valid
	13	4	3	0,625	Fairly Valid
	14	3	3	0,5	Fairly Valid
Total		58	56	0,767857	Fairly Valid

Below is presented data from validation results by learning media experts, namely in Table 4.

Table 4. Learning Media Expert Validation Results on Ebooks

Aspects assessed	Item	Score		Aiken Index	Validity Criteria
		1	2		
Technical	1	5	5	1	Very Valid
	2	5	5	1	Very Valid
	3	4	4	0,75	Fairly Valid
Cover Design	4	4	3	0,625	Fairly Valid
	5	4	5	0,875	Very Valid

	6	5	5	1	Very Valid
Content Design	7	4	4	0,75	Fairly Valid
	8	4	4	0,75	Fairly Valid
	9	4	4	0,75	Fairly Valid
	10	5	4	0,875	Very Valid
	11	4	3	0,625	Fairly Valid
	12	5	4	0,875	Very Valid
Total		53	50	0,822917	Very Valid

HOTS-based tests were assessed by validators as valid. The two aspects assessed were the suitability of the indicators and the editing of the questions as shown in table 5 below.

Table 5. Validation Results of HOTS-Based Test Instruments

Aspects	Max Score	Score		Validity Criteria
		1	2	
Indicator Suitability	40	40	40	Very Valid
Editorial HOTS Questions	40	36	34	Very Valid
Total	80	76	74	Very Valid
		Average = 75		
		Percentage = 0,937	Very Valid	

3.2. Limited Trial Results Data

Product revision based on expert's suggestion the validator (draft 2) Then the limited trial was conducted to determine the practicality of the device. A pilot test was conducted on students 2021 class A and B of Cosmetology Education study program the Medan State University. The results of the limited trial consist of two, namely the results of the lecturer's assessment and the student's assessment (readability test). In the teacher assessment, two lecturers for the special make- up course for the Cosmetology Education study program were selected. The results of the lecturer's assessment of the learning tools are as in Table 6.

Table 6. Results of Lecturer Assessment of Learning Tools

Evaluator	Total Score for Each Aspect		
	RPS	EBook	HOTS Test Instrument
Lecturer 1	44	42	40
Lecturer 2	45	43	43
Average	44,5	42,5	41,5
Percentage	89%	85%	83%
Criteria	Very Practical	Very Practical	Very Practical

The results of this assessment show that on average the learning tools have met the practical criteria so that It is concluded that the teaching device is suitable for use in learning in Special

Makeup course. Furthermore, student assessment results of learning tools were analyzed from the results of the assessments of ten 2021 Class A and B students. Meanwhile, data on student assessments result (readability test) of Ebook learning tools and HOTS test instruments are as in Table 7.

Table 7. Results of Student Assessment of Learning Tools

Aspects assessed	Max Score	Average Score	Percentage	Criteria
Ebook	40	34,7	86,7 %	Very Practical
HOTS Test Instrument	45	38,5	85,5 %	Very Practical

3.2.1. Field Trial Results Data

Learning device products that have undergone expert trials and limited trials are then called draft 3 and field trials are carried out. The trial was carried out on 65 2021 class A and B students with two lecturers in the Special Makeup course. Learning is conducted in seven meetings and at the eighth meeting a test was given consisting of five descriptive questions that measured students' HOTS. The data from field trials is as shown in table 8 below:

Table 8. Data from Field Trial Results

Aspects	Student	Max Score	Total Skor	Average Score	Average Score	Criteria
HOTS essay test 1 - 5	65	6500	5310	81,7	81,7%	Very effective

Based on the table above, it can be seen that the percentage of student learning outcomes exceeds the minimum value requirement, namely that the average test value obtained is 81.7, so it is declared that they have exceeded the minimum value, namely 75, with a percentage value of 81.7%. This shows that teaching tools in very effective criteria.

3.2.2. Product Revision

At each stage of the expert validation trial, revisions are carried out to obtain the product's suitability for use. In expert validation trials, the product is revised based on suggestions provided by the validator. Improvements made to the RPS include; improving course learning sub-achievements (Sub-CPMK), indicators, case assignment narratives and time distribution (plots) for 6 forms of assignments, namely routine assignments, critical book review (CBR) assignments, critical journal review (CJR) assignments, Mini assignments research, idea engineering tasks, and projects. In general, suggestions for improvement from the validator include: contrast of the color of the cover and writing, layout of the presentation of photos/images, practical work steps in the ebook, presentation of videos which include narration in the video, brightness of colors and sound, suggestions for presenting barcodes to connect with the video, as well as learning evaluation narratives. Furthermore, improvements

were made to the HOTS test instrument in accordance with the validator's suggestions, including: the order of questions and the narrative used.

Revisions made in improving the learning tools (RPS, ebook, HOTS test instrument) are based on the results and suggestions from trials, which are generally limited to writing indicators and case narratives in the RPS, question sentences in the test instrument and image layout, narratives that are too fast on video. Revisions are made based on suggestions and input from lecturers. At the field trial stage, revisions were also carried out based on the lecturers' findings and suggestions when using the learning tools.

3.2.3. Final Product Review

The resulting products are HOTS learning tools, namely semester learning plans, ebooks and tests. The learning tools are assessed through validity, practicality and effectiveness.

The learning tools are: the Semester Learning Plan developed meets the Very Valid criteria, the ebook integrated with video developed based on learning design experts meets the Fairly Valid criteria, while the ebook assessment by learning media experts meets the Very Valid criteria, and the HOTS test instrument developed meets the Very Valid criteria. Valid based on content validity by two validators. This shows that the components of the learning tools developed are in accordance with the indicators set in the learning tool validity instrument. The learning tools developed also have a strong unity and there is internal consistency between the components of the tools developed.

The practicality of learning tools is based on lecturer assessment and student assessment (readability aspect). Based on data analysis, the average score of student assessments and lecturers' assessments are classified as the Very Practical category, respectively. Indirectly indicating that the learning tools developed meet the Very Practical category.

The learning tools product, namely the HOTS test instrument, meets the Very Effective criteria. This means that there is consistency between learning tools and learning outcomes The effectiveness criteria are met based on analysis of descriptive test data that measures student HOTS. Analysis of student HOTS test results shows that the average percentage of student scores is more than the set criteria, namely a minimum score of 75. The percentage of scores is 81.7% with an average score of 81.7.

According on an assessment of three aspects, it was concluded that the HOTS-based learning tools in the Special Cosmetology course met the criteria of being very valid, very practical and very effective.This shows that the device developed is suitable for use in learning the Special Makeup course. This is in accordance with the opinion of (Nieveen, 1999, p.127 in Susanto et al., 2016) which states that the quality aspect of learning device consideration materials must pay attention to three aspects, namely: validity, practicality and effectiveness.

4 Conclusion

HOTS-based tests, and (c) developing student HOTS. (2) The final learning device product meets the validity criteria with an average score of validator assessments in the very valid category. (3) The final learning device product meets the very practical criteria with the

average lecturer assessment in the very practical category and the average student assessment in the very practical category. (4) The final learning device product meets the criteria for being very effective as shown by the percentage of trial learning scores more than the minimum score of 75, namely 81.7% with an average score of 81.7.

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