Design and Feasibility Test of Higher Order Thinking Skills (HOTs) Based Electronic Modules in the Hybrid Learning Era

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Abstract. The background in this study is that there are still many low-order thinking skills (LOTs) in the hybrid learning era, students only use unvalidated print modules. This research aims to produce e-module-based higher order thinking skills in guidance and counseling program development courses to optimize hybrid learning. This study used Research and Development (RnD) methods with ADDIE (Analyze, Design, Development, Implementation, and Evaluation) models. In this article, researchers discuss the development stage. The module design used iSpring Suite 11 software and feasibility tests were conducted by three media experts and three material experts. The data collection method uses a likert scale. Data analysis techniques for module feasibility use quantitative and qualitative descriptive analysis. The results of this study showed that (1) e-module based higher order thinking skills were considered feasible by linguists, graphic design experts, material experts so that students could be utilized in the course of learning the subject of tutoring and counseling program development at school. Based on the results of the study, it can be generally concluded that the resulting research products are viable and can be used to help students improve their original low order thinking skills to higher order thinking skills in class. Thus the products of this study can be recommended for the introduction and use of guidance and counseling students.

Keywords: E-Modul, *HOTs*, Hybrid Learning

1 Introduction

Around 2019 until now, the Ministry of Education is still restricting its activities including teaching activities at universities. This is in line with the decision of the Minister of Education, culture, research and technology, that university learning is conducted in a hybrid learning manner, namely face-to-face learning and in networking [1]. Although some meetings take place face-to-face, each university must implement a very strict health protocol. The policy was a follow-up to the evaluation results during the implementation of the Learning policy in the network throughout the Covid-19 pandemic.

Hybrid learning integrates innovation and technological advances that traditional learning models originally used to be online learning systems. So that the more dominant role of students (student centers) in the learning process, students are able to study independently

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without an accompanying lecturer, while lecturers are facilitators. Learning using technological advances is a new alternative that allows students to study independently on topics related to learning materials in the form of electronic modules [2]. This self-study student needs to be provided with supportive teaching materials, such as electronic modules (e-modules) that are interesting and validated in terms of materials so that students can understand learning materials easily and clearly. It is in line with this that electronic modules are tools or means of learning that contain materials, methods, limits and methods of evaluating that are systematically and interestingly designed to achieve the expected competencies [3]. With the presence of this electronic module, students can be helped a lot to understand learning materials and can learn independently.

Utilizing electronic modules in hybrid learning has many advantages. The advantage of electronic modules is that they save money for printing costs, can be learned anytime and anywhere by using tools such as computers, laptops, tablets, and mobile phones, explaining learning materials such as techniques or steps can be explained using audio, video, and images [4]. Students using Electronic modules are also able to improve critical thinking or HOTs (High Order Thinking Skills), research results show that student-type teaching materials designed to suit basic competencies, and contain high-level thinking (High Order Thinking) can optimize students' learning outcomes [5]. From this study, teaching materials containing HOTs can optimize students' learning outcomes, while researchers will research teaching materials in the form of electronic modules based on HOTs in the Hybrid Learning era. Further research results suggest that e-modules based on problem solving can be used to develop critical thinking skills of students [6].

High Order Thinking Skills are divided into four groups: problem solving, decision making, critical thinking, and creative thinking. HOTs learning is the learning of high-level thinking skills that encourage students to think critically, creatively, collaboratively, and communicate [7].Based on a preliminary study, the results of the LAP analysis on the final score of the test showed as many as 45 students (53%) had Sufficient HOTS Thinking Ability. The next section through content analysis shows that 53 students (62%) experienced difficulties in creating/forming mathematical sentences [8]. The analysis results can be concluded that students tend to have sufficient HOTS thinking ability and are still low in answering problems with cognitive domain C6, while students' constraints are found in the process of making/forming mathematical sentences. The conclusions obtained have implications for improving students' thinking ability at each level of the cognitive domain through HOTS-based assessment.

From the above explanation, HOTs is expected to help the process to optimize Hybrid Learning. One critical thinking aspect of High Order Thinking Skills is one of the efforts to improve the quality of students and students in the Hybrid Learning process. The definition of high-level thinking skills is categorized into three parts: as a form of learning transfer, as a form of critical thinking, and as a problem-solving process [9].

Based on the above research results, researchers are interested in developing HOTs-based modules in the course of teaching and counseling program development in schools, in order to help students understand concepts and practices in the Hybrid Learning Era.

1.1 Module Electronics

In this digital age, an educator must encourage the fusion of print technology and computer technology into learning activities. Modules as a medium of print learning are transformed into electronic forms, giving rise to the term electronic modules or known as e-modules. An electronic module or e-module, defined as a learning medium by using a computer that displays text, images, graphics, audio, animation, and video in the learning process. Electronic modules are composed of links that make students more interactive with the program and are equipped with video tutorials, animations and audio to enrich learning experience The use of e-modules in the learning process will foster creativity, productive thinking habits, create active conditions, and improve learning. effective, innovative and fun [11].

The learning process carried out by a lecturer in his class should be aimed at facilitating the achievement of competencies that have been designed in the semester implementation plan document (RPS) so that in turn every student can become an independent learner. Discussing self-study activities [12] is the need to optimize learning resources by still providing greater opportunities for students to control their learning activities. The role of teachers/tutors shifts from information givers to learning facilitators by providing the various learning resources needed, stimulating the learning spirit, giving opportunities to test or practice their learning outcomes, providing feedback on learning development, and helping to ensure that what has been learned will be useful in learning. his life. For this reason, modules are required as the main source of learning in self-learning activities. The benefit of self-study students is to produce meaningful knowledge, because by seeking to solve problems independently, it will provide a concrete experience, and this experience can be used in solving similar problems, so that the experience gives students their own meaning [13].

1.2 High Order Thinking Skills

High Order Thinking Skills-based learning aims to encourage a person to come up with new ideas or thoughts about a problem. HOTS is an ability to think by making interrelationships between facts to a problem. Problem solving is done not just through the process of remembering or memorizing, but requires to make relationships and conclusions of the problem. Students' HOTS develop well, students need to be used to measure through HOTS, otherwise it will cause the potential of HOTS in students to not develop. Accompanying the same [15] explains HOTS is the ability to combine facts and ideas in the process of analyzing, evaluating to the stage of creating, evaluating, evaluating, or creating facts that have been learned.

HOTS is defined as the ability that involves critical and creative thinking to solve a problem. A person with a high level of thinking ability must be able to analyze, connect, parse and identify problems to obtain new solutions or ideas. HOTS itself is part of the cognitive domain of the revised Bloom Taxonomy. HOTS is at the level of analyzing, evaluating and creating [16]. The process of analyzing, evaluating and creating is part of the cognitive taxonomy created by Bloom was further refined by Anderson and Krathwohl into C1-remembering, C2-understanding, C3-applying, C4-analysing, C5-evaluing, and C-creation. Levels one to three are low-level thinking ability or LOTS (Lower Order Thinking Skill) and

levels four to six are HOTS (Higher Order Thinking Skill). The cognitive domain of HOTS is the ability to analyze, evaluate, and create.

1.3 Hybrid Learning

Hybrid Learning is a model that combines face-to-face learning and online learning. Hybrid learning models can also be said to combine class learning with online learning by utilizing existing technologies. Hybrid learning is learning that combines a variety of methods of transmission, teaching models, and various technological media. In addition, glaring hybrids not only reduce the distance between students and teachers but also increase interaction between the two sides [18]

Learning with hybrid learning models has several advantages: 1) students not only learn more at the time of online sessions added to traditional learning, but can improve student interaction and satisfaction; 2) students are equipped with many options in addition to learning in the classroom, improving what they learning. The presentation of data is more quickly delivered by students who learn using e-learning; 4) not only by one-way sequential learning, with hybrid learning students having the opportunity to learn the desired material, and flexible schedule and time settings. The child was able to socialize with friends and teachers [19]. Based on the research results that the implementation of Hybrid Learning models of hybrid learning is seen as suitable as an effective learning solution in the new normal age [20].

2 Research Methods

This study was conducted to develop e-modules in the course of the development of guidance and counselling programs in schools. The development procedures applied in this study follow development steps according to the ADDIE model. Broadly, the development procedures in this study are presented in the drawing of the development process of the ADDIE model according to Borg and Gall [21] as follows:

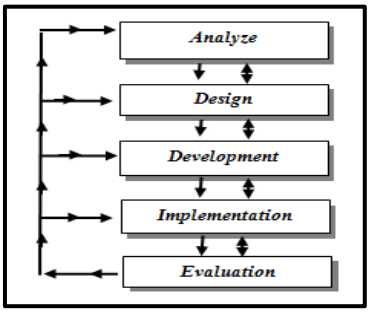


Fig.1. ADDIE Model Diagram

The ADDIE model diagram in Figure 1 above shows the continuing development process. Between these stages have a connection. In this article, researchers discuss the development stage. Data collection techniques consist of (1) Scales arranged by aspects and indicators, including the scale of validity tests by media and material experts. (2) The documentation in

this study is supportive data, such as the Semester Study Plan (RPS) in the Guidance and Counseling (BK) Program Development course at School. The data analysis techniques used are qualitative descriptive data analysis techniques and quantitative descriptive analysis techniques.

3 Result and Discussion

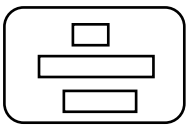
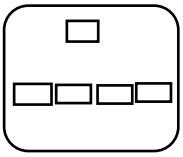
3.1 Design

The purpose of this design phase was a module originally designed and developed into E-module based high order thinking skills. Here are the results of the developed module design.

Book Cover
Book Identification
Introduction
Table of Contents
Chapter 1. Need Asessment in BK Program Development
Chapter 2. Introduction of Basic Concepts of the Comprehensive BK Program
Chapter 3. Procedures for Developing BK Program
Chapter 4. Evaluation of BK Program
Chapter 5. Practice of Developing BK Program in Schools
Library List
Author Identification

Fig. 2. E-Modules Layout

The module has been designed so that the module is designed based on higher order thinking skills. The following module designs are based on higher order thinking skills.

Visual	Description
1. Front Cover View 	The front cover consists of the following parts: 1. Drawings related to module titles 2. Module Title 3. Writing team
2. Rear cover view 	The rear cover consists of the following parts: 1. Identification of Author 2. Publisher Logo 3. Publisher Address 4. HKI logo 5. ISBN Number

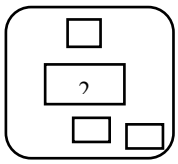
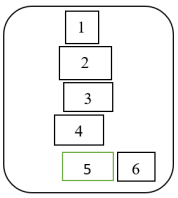
3. Introduction 	The introductory page consists of several sections. 1. The title "Introduction" 2. Fill in 3. Description of place, month, year, writing team 4. Page
4. Content of Materials 	The module's Contents page consists of several sections. 1. Chapter Titles 2. Material Contents (moving animations and videos based on HOTs) 3. Summarise 4. Task 5. HOTs-based Self Test 6.Page

Fig. 3. HOTs based module layout

Existing modules were developed based on HOTs by observing the data obtained at the next analysis stage designed to electronic modules with iSpring Suite 11 software. The E-module was developed in simple language, graphic design, and material based on high order thinking skills, the book consists of five chapters.

3.2 Feasibility Test

This development phase aims to validate three media experts and three materials to assess the feasibility of the designed module. The process of validation of material experts is done twice, namely initial validation and validation after revision. The following table lists the results of module validation to the Languages expert.

Table 1. Module Validation Results To Media Experts

No	Aspect	Average Expert Score			Average	Category
		A	B	C		
1	Screen Design View	2.63	2.88	3.00	2,83	Feasible
2	Ease of Use	3.20	3.10	3.00	3,10	Very Feasible
3	Consistency	2.60	3.00	2.82	2.80	Feasible
4	Usefulness	3.33	3.12	3.21	3.22	Very Feasible
5	Fragility	2.90	3.00	2.76	2.88	Feasible
Overall Average		2,93	3,02	2,95	2.97	Feasible

According to the table above, the overall average score of 2.97 categories means that the E-module for the development of guidance and counseling programs based on higher order thinking skills is media-worthy for the use of guidance and counseling students.

Table 3. Module Validation Results To Material Experts

No	Aspect	Average Material Expert Score			Average	Category
		A	B	C		
1	Contents	2.80	2.65	3.00	2,81	Feasible
2	Language	2.59	2.71	2.67	2,65	Feasible
3	Presentation	3.04	3.03	3.06	3,04	Very Feasible
4	HOTs	2.77	2.63	2.73	2.71	Feasible
	Overall Average	**2,80**	**2,75**	**2,86**	**2.80**	Feasible

According to the table above, the overall average score is 2.80 with a decent category, meaning that the E-module for developing high-order thinking skills-based guidance and counselling programs is materially in the category of suitable for students to use when attending development lectures guidance and counselling program.

Based on the description of the data from the study, the following discussions were given:

a. E-Module-Based design of HOTS in the Hybrid Learning era

Results of analysis of semester learning plans (RPS) and literature studies on HOTs as considerations for designing E-modules. Analysis is aimed at finding theoretical concepts or foundations that reinforce e-module products. Through this analysis, the scope, scope of use, supporting conditions for chemical learning e-modules to be used, and their advantages and limitations. In the era of hybrid learning, e-module design is a problem in Hybrid Learning, which is not yet optimal technology literacy; limited time, lack of awareness from students and some guardians to maximize their learning assistance. The solution provided is to provide more maximum assistance related to digital literacy so that the learning carried out in the future is more maximum [22]. Digital literacy refers to e-modules as alternative learning resources that are easy to obtain, easy to understand, and attract readers.

The e-module uses the iSpring Suite 11 software that produces e-modules based on high order thinking skills. Research results suggest that e-modules based on problem solving can be used to develop critical thinking skills of students [23]. The e-module is designed to be an alternative learning resource that can help students learn whenever and wherever and as a source of self-study in school [24]. Adding multimedia (pictures, animations, sound effects, etc.) at the time of designing modules to make students more interested in learning about them [25]. The research results also show e-module design characteristics consisting of cover, introduction, table of contents, module position map on learning, Introduction learning glossary, evaluation and closure. Learning materials have several features, such as animation, links, text, audio, images, videos, and quizzes to complete and help students learn. As well as other support features to help facilitate navigation in the form of buttons: thumbnail, go to page, zoom, bookmark, voice control, search, print, share via email, share via social media, return to home screen, auto flip, and select text. Records by media experts indicate that the product is in the top category. The results of the due diligence were 93.4% [26].

b. E-Module E-Feasibility Development Program Guidance and Counselling Based on *High order thinking skills*

Implementation of the development of this module, after the analysis and design phase of the module is carried out. The development phase presented the results of the E-module validity test for the development of guidance and counselling programs in high-order thinking skills schools to the three media experts and material experts. Media experts' validation results show an overall average score of 2.97 with a decent category. In line with the research results that show e-modules are developed adequately from design aspects, and materials [27]. When viewed from every aspect, the ease of use and benefits of being in the category are very

feasible. It means that HOTs-based e-modules developed are easy to use and are useful for guidance and counselling students when preparing guidance and counselling programs at school. Aspects of screen design, consistency and graphic design fall into feasible categories.

Furthermore, material expert validation results show an overall average score of 2.80 with a decent category. Judging from every aspect, what is in the category is very decent is the presentation aspect, while the content, language, and HOTs aspects are in the category of decent. It means that the developed e-modules are easy to understand and interest the reader so that students can easily use them as a source of self-study that can be used at any time without any restrictions on time and space. From the results of the identification that the blog-based e-module tested is feasible and practical as a source of self-study in schools [28].

E-modules worthy of media and material aspects are considered effective in improving student learning outcomes [29]. HOTS-based interactive modules to improve students' science literacy skills in the medium category and deserve to be used as learning modules [30]. Research results show that e-modules developed in the form of application software include competence in making body proportions, and electronic module products are considered worthy of media and material aspects so they are used as self-study aids for students [31].

This further strengthens that E-module development guidance and counseling programs based on higher order thinking skills are worthy of use by students of counseling guidance and can be used in the course of learning the development of guidance and counseling programs in schools.

4 Conclusion

Based on the above research and discussion results, it can be concluded that E-modules development guidance and counselling programs in high-order thinking skills-based schools with decent categories from both media and material aspects. This can be seen from the results of validating three media experts with an average aspect score of 2.97 and three material experts with an average aspect score of 2.80. This means that E-modules for the development of guidance and counselling programs based on higher order thinking skills are materially in the category of suitable for guidance and counselling students to use when attending school guidance and counselling program development lectures.

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