

## E-Module Helicopter Landing Officer Using Canva Platform

Taufik Ismail Husain, Ahmad Musadek\*, Lady Silk Moonlight

*Politeknik Penerbangan Surabaya, Jalan Jemur Andayani I No 73, Kota Surabaya, 60236*

*\*Corresponding Author. Email: [ahmad.dzadek@gmail.com](mailto:ahmad.dzadek@gmail.com)*

### Abstract

One of the licenses that is quite much needed at this time is the Helicopter Landing Officer. Surabaya Aviation Polytechnic as one of the vocational institutions in the field of aviation provides HLO training. But until now, the unavailability of teaching materials that can be accessed by all training participants has become a challenge for Poltekbang Surabaya, so to create of teaching materials for Helicopter Landing Officer training and uploaded into the learning management system of Surabaya Aviation Polytechnic for the benefit of the training process. The e-module itself has several advantages over printed modules, including that it can more easily provide fast and automatic feedback for education and training participants. The process of preparing and testing the use of the HLO e-module, using the Research and Development method, where the method is devoted to the development of new products or adding functions to existing products. The process of preparing the HLO e-module was carried out using the ADDIE method (Analysis, Design, Development, Implementation, Evaluation). In the final result of the research, the preparation of the e-module has been successfully achieved and is included in the "feasible" category for material validation assessment, and "very feasible" for the response of training participants based on the results of data analysis from researchers. The research process has been in accordance with the initial research design and is expected to help the ongoing training process later.

**Keywords:** E-Module, Canva, Helicopter Landing Officer

### INTRODUCTION

Helicopter fleet production growth data in Indonesia in 2021 reached 5% YoY[1]. Helicopters to connect remote points in Indonesia with time-saving and high efficiency so that the use for military purposes, logistics delivery, and disaster management, become the main market for marketing rotorcraft fleets in Indonesia. Moving goods and individuals from one location to another faster, and the ability of helicopters to take off in locations with limited facilities are the advantages of helicopters over other transportation.

In addition to the pilot or crew, to support the security and safety of operations, helicopters require personnel with certifications and licenses to carry out operations in the ground area.[2]. Referring to[2],[3],[4] Ownership of a license or certificate of competence in accordance with the field of operation for each individual on the air side, is a mandatory thing that must be fulfilled. In addition to meeting the administrative requirements set by the Ministry of Transportation of the Republic of Indonesia, the existence of appropriate licenses and ratings will

ensure that each personnel has competence in accordance with the field of operations being worked on.

To obtain a license, a person is required to take a series of training courses, namely initial courses for prospective personnel who want to get a license, and refresher courses for personnel who want to extend the validity period of the license[3]. Surabaya Aviation Polytechnic as a certified training institution, has the authority to issue licenses and HLO personnel ratings for prospective personnel who have attended training and cadets of the Air Transportation Management study program. Based on the results of researcher observations, this training institution does not yet have its own teaching materials, and the ongoing training process is still carried out in the classroom where the presence of instructors greatly influences the training process. Please note, with the LMS or learning management system of Surabaya Aviation Polytechnic, the ongoing training process can be further developed. With E-learning, an independent platform that offers adaptation to learning objectives and the speed of acquiring knowledge for trainees.

These learning schemes are reported to be more engaging for learners and are associated with higher

satisfaction[6],[7]. So that the process of developing teaching materials or e-modules for HLO training requires the involvement of competent parties in the field of educational technology, media experts, and also certified HLO instructors [8]. So that the E-learning method shows at least equivalent effectiveness in knowledge acquisition compared to traditional learning methods [9].

For reference[2], then the training process that takes place at least contains several ranks that are needed by many helicopter personal, namely :

Helicopter Landing Officer Licence/ HLO	1. Helicopter Landing Officer	HLO	Helicopter Landing Service Field
	2. Helideck Assistant Fire Fighting	FFT	Fire fighting
	3. Helideck Assistant Dispatcher	DSP	Dispatcher
	4. Helideck Assistant Freight Handling/ Material	FHN	Freight Handling/ Material

**Figure 1 Helicopter Landing Officer Personnel Rating**

To ensure the process of absorption of content and discussion, the preparation of teaching materials developed must also be digitally accessible. Referring to[10],[11],[12]Electronic modules are electronic adaptations of conventional modules that are developed and evaluated in digital form. The use of electronic modules has several advantages over printed modules. One of them is interactive, which makes navigation easy, can present an attractive appearance, and contains video, audio, images, animations, and formative quizzes that are likely to provide fast and automatic feedback for education and training participants. The combination of electronic module development into a learning management system is then referred to as CMS (Content Management System). CMS (Content Management System) is a software or system used to assist the content management process on a website.[13].

In the process of preparing teaching materials for training purposes, a research process is needed that creates an efficient learning environment and improves learner performance.[14]. Thus, if referring to[15], [16]then the ADDIE or waterfall research model which starts from the analysis-design-developmentimplementation-evaluation stage is a research model that is quite suitable for use in the process of preparing the HLO e-module. The ADDIE preparation model is systematic and sequential in building a software and has several advantages, including: it can be easily understood and can be applied in the process of developing new products such as e-modules.[17]. The ADDIE development model is one of the research models of the research and development method which is often used for the process of preparing scientific papers, innovations, and developing finished products by adding existing functions[18]. Referring to[19],[20],[21]The research and development method or commonly known as research and development is a method developed to

research a new product that can help the community. This research explains the process or steps in developing an existing product so that it can be accounted for. To be able to produce a product, research must fulfill a needs analysis by testing the effectiveness of the product so that it can function in society.

R&D research using the ADDIE or waterfall model has the stages needed to fulfill and measure the effectiveness of the product developed, namely the Helicopter Landing Officer electronic module. With this development research method, it is hoped that it will be able to attract student interest in learning and improve the quality of students in the Air Transportation Management Study Program as well as participants in the initial training and refreshing courses that take place at the Surabaya Aviation Polytechnic.

To fulfill the objectives of this study, the following questions were asked:

1. How to design and compile an Electronics Module on the Helicopter Landing Officer course with the ADDIE model RnD research method?
2. How to test the feasibility of Electronic Modules?

## METHODS

### *Research design*

According to Research methods are essentially scientific methods to obtain information for specific purposes and uses. Based on this, there are four keywords that need to be considered, namely scientific methods, data, goals and ease of use [5]. That is because the RnD method helps developers in analyzing problems and the process of working on a system, producing certain products, and testing the effectiveness of these products[21]. The manufacturing process follows the flow from analysis, design, implementation, testing and maintenance. The Waterfall development model has several advantages, among others: it can be easily understood and can be applied in the process of developing new products such as e-modules. Many development models are commonly used to design learning systems, one of which is the ADDIE development model developed by Dick and Carry This learning model consists of five phases namely analysis, planning design, development, implementation and evaluation.[22]:

- 1) Analysis. System requirements analysis includes users (users and admins), supporting data, and application functional calls;
- 2) Design. The planning stage is the planning stage of the future product concept;
- 3) Development. Development is the process by which designs become reality;

- 4) Implementation. The implementation is a product trial as a concrete step to implement the product we produced;
- 5) Evaluation. This is the process of evaluating the product produced successfully, according to initial expectations or not.

### ***Research Instrument***

The research instrument or media used to test the feasibility of the HLO e-module is a questionnaire or questionnaire, which the questionnaire assessment process uses a Likert scale as a scale measure. This questionnaire method is a technique for collecting data that is carried out by giving written statements to the assessor to answer.[18]. To determine the validity and feasibility of the e-module material that has been prepared, researchers conduct an assessment related to the response of training participants and the validity of the material by involving related respondents.

### ***Validation Questionnaire***

Questionnaire Validation is used to assess the validity of the material compiled in the HLO electronic module. Referring to[23], to assess the validity of the material, the aspects of the assessment that are assessed include;

- 1) Quality of content and objectives;
- 2) Instructional quality;
- 3) Technical quality;

Questionnaire validation was assessed by 5 respondents including; 3 educational technology expert respondents, 1 HLO instructor, and 1 media expert.

### ***Trainee Response Questionnaire.***

The Training Participant Response Assessment Questionnaire is used to determine the need to develop the Helicopter Landing Officer e-module to optimize the training process at the Surabaya Aviation Polytechnic. The questionnaire contains containers related to the ease of understanding training materials, the ease of using learning media, and the responses of trainees regarding the use of e-modules. Based on[24],[25], several indicators of evaluating the response of training participants include; 1) Media interest;

- 2) Media materials;
- 3) Language Usage;
- 4) Activeness of Training Participants;
- 5) Use of Media;
- 6) Interest during the training.

Due to the limited research time to assess the impact of the media developed in the training process, this instrument will be given to 37 cadets of Surabaya Aviation Polytechnic who focus on related fields, so that

the assessment, used to assess how the training participants respond if later used in classroom conditions.

### ***Data Analysis Technique***

This activity of providing user needs questionnaires and validation is carried out using a development research calculation scale for quantitative calculations, so that the results are given a score according to the table that is assessed using a Likert scale. Likert scale according to[26], is a scale used to measure the attitudes, opinions, and perceptions of a person or group of people about social phenomena. Likert scale calculations can be assessed by calculations in accordance with[27]as follows:

$$\text{Percentage} : \frac{\text{Number of Scores Earned}}{\text{Total Highest Score}} \times 100\% \quad (1)$$

### ***Validity Test***

Before the process of drawing conclusions related to the final results of the data, validation testing of research instruments needs to be done with a validation test. Validity is a measure of how effective a research tool or instrument is[18]. An instrument is said to be valid if it can measure what is desired and reveal precisely the data variables under study[27]. Check the validity of the Pearson correlation using the principle of correlation, or connect each score or question with the total score obtained from respondents' responses to the questionnaire. The rcount price will then be compared with the rtable at the 5% significance level. If the rcount value is rtable, then the instrument item is valid. However, if rcount < rtable, then the instrument item is invalid. The number of respondents was 37 cadets. The Pearson Product Moment Validity Test is a method of comparing the calculated r value with the r table value and comparing the significance value below 0.05. Where the value of r count is the same as the Pearson Correlation value. Meanwhile, the value of r table is in the distribution of r table. From the previous explanation, it is known that the value of r table with  $df \approx 37$  or the number of respondents 37 and sig 5% is  $0.325 \geq$

### ***Reliability Test***

Reliability is a measure of whether the answers to questionnaire questions are consistent. The requirement for a reliability test is that the question items on the questionnaire are declared valid.[18]. In this study, the Cronbach Alpha reliability test was used using SPSS software.

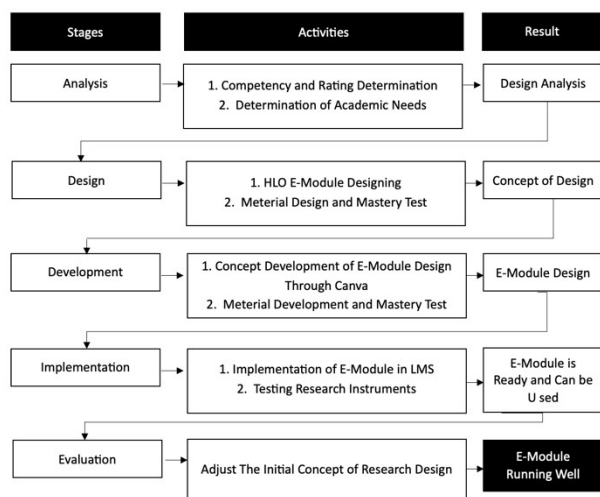
### ***Content Validation Test***

The CVI or Content Validation test is used to assess the validation number that has less than 30 respondents.

The appropriate sample size in research is between 30 and 500, and for simple experimental research, the number of sample members is between 10 and 20, respectively

[28]In this study, the authors used a sample size according to the CVI validity test steps to calculate the proportion of each expert's assessment score and then calculate the average of these proportions known as the Average Congruency Percentage (ACP).[29]. Referring to the research instrument testing with the CVI approach shows that the research instrument is valid with a CVI value of 0.84 or 84% with 5 expert respondents.[30].

## RESULTS AND DISCUSSION



**Figure 2 Flowchart of ADDIE Model for HLO Emodule**

The final results of the e-module development research using the ADDIE model were successfully completed with a percentage of 86.2% for the material validation assessment, and 85.3% for the response of the trainees in participating in learning activities using the emodule media published on the Surabaya Aviation Polytechnic LMS. The research process is projected into a flowchart that contains each stage, the activities carried out, and the results of each stage. The flowchart prepared has gone through a process of adjusting to the needs of researchers in the development process while still paying attention to compatibility with the initial theory.

### Product design

#### Analysis Stage

At the research analysis stage, observations were made regarding the purchase of competencies needed for the personnel training process. This preliminary research includes observations on the official website of the Surabaya Aviation Polytechnic regarding the competencies that must be possessed by each HLO training participant and Air Transportation Management cadets who also have needs related to ground operations from a helicopter. By referring to the initial training syllabus for the Helicopter Landing Officer course published by Politenik Penerbangan Surabaya.[31]The final result of the analysis stage, the arrangement of the loaded content, namely;

- 1) Helicopter knowledge;
- 2) Heliport facilities;
- 3) Heliport Operations;
- 4) Communication;
- 5) Emergency Response Plan;
- 6) Fire Fighting Operations;
- 7) Passenger, Baggage and Cargo Handling;
- 8) Heliport management and legislation.

In addition, in completing the learning media, researchers also completed the Surabaya Aviation Polytechnic LMS which can be accessed through <https://courses.poltekbangsby.ac.id>. With the help of the LMS, the use of teaching materials prepared can be much more optimal than the conventional learning process.

#### Design Stage

In the design stage, the process of drafting the emodule design is carried out with the output of the module structure, discussion of content in accordance with competencies, display design, uploading design, and component mastery tests to measure trainees in understanding the ability to discuss each sub-chapter. In the design stage, researchers determined several important things, among others;

- 1) The output of electronic modules is reading material with .pptx files, and learning videos that are divided by each topic of discussion.
- 2) Fill in the mastery test at the end of each topic with 5 essay questions.
- 3) Publishing uses an embedding technique in the form of HTML links containing e-module information into the LMS, and access is limited to viewing, without being able to download, and edit HLO e-modules.

The consideration of the content of the mastery test placed at the end is to ensure that the trainees receive the material as a whole first, before being tested for understanding related to the content of the discussion. On the other hand, the publishing stage that uses the embedding method is to limit user access, because HLO training is a Mandatory Course, so access to training materials should be limited, and so that the accessibility of training participants to the material can continue to be under the control of the admin and HLO instructors.

#### Development Phase

The development stage is the process of realizing the design concept that has been prepared in the previous stage. The process of developing the HLO electronic module itself is to use Canva copyright 2023 media, and use templates with a simple, attractive and interactive appearance. The development stage is carried out by paying attention to each component that has been

compiled from the design stage, such as output in the form of .pptx and discussion videos, mastery tests at the end of each discussion, and uploading using embedding information in the form of HTML links connected to the admin.

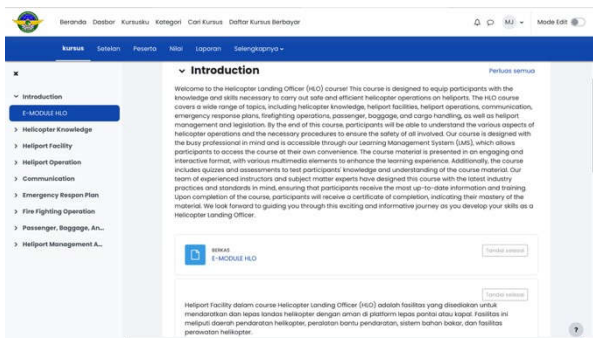


Figure 3 E-Module view in LMS

The development stage is the process of realizing the design concept that has been prepared in the previous stage. The development process. In addition to the process of preparing the module based on the design concept, at this stage the researchers also carried out several other activities, such as publishing, and also evaluating the validity of the material by assessing the response of the training participants regarding the use of the module when used in the training process, as well as accessing the module on the Surabaya Aviation Polytechnic LMS. The following is the final appearance of the LMS that has been compiled, and is ready to be used for the training process.

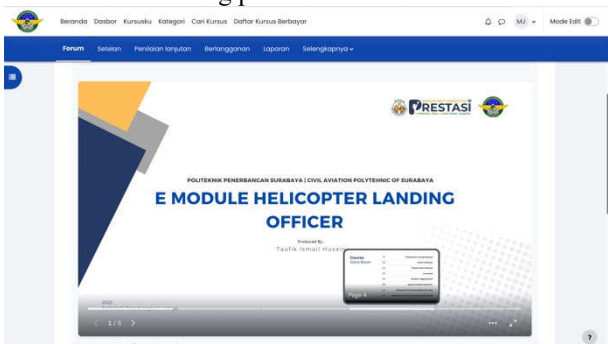


Figure 4 Helicopter Landing Officer Course at LMS

In the LMS, the division of material is also maximized so that trainees can be facilitated to access each discussion point. This is done so that trainees do not need to leave the LMS to conduct HLO learning and fulfill every discussion through the LMS. In addition, to support the learning process, several additional references related to each material, syllabus and learning capabilities, as well as the HLO Handbook are also published on the LMS to help trainees to find additional material or topics that have not been understood.

*Implementation Stage*

Due to the limited time of the research, the implementation stage of the e-module for the training process and Air Transportation Management cadets was

completed at the introduction stage. the use of the HLO e-module that has been completed, to the socialization or container stage to Air Transportation Management cadets in semester 1 and 3, which will later be used during the learning process at the next level or for the training process at the Surabaya Aviation Polytechnic later. This implementation stage is carried out with the aim that the e-module is ready to be used, and accessed by MTU trainees or cadets when the course process starts. Given that the HLO e-module can be used for the purpose of introduction as well as the official training process, of course, revisions related to content and media can be used by the training institution of the Surabaya Aviation Polytechnic. At this stage, the authors are fully responsible for making teaching materials, and attracting the needs needed, related to the specific process of training, of course, it is fully submitted to the relevant training institution. Thus, access to the use of e-modules can be done by the admin and instructors of related HLO courses.

*Evaluation Stage*

The last stage, the researcher ensures that the process of preparing the e-module has run with the initial framework and achieves the objectives of the preparation of the student ability module which is the pathway of participation in learning activities. The measurement process, each stage of the completion of the research has been achieved, is by the achievement of each activity, and the final result with the flowchart in **Figure 2** Flow Chart ADDIE Model for HLO E-module. As well as to ensure the validity of the material and the response of the trainees is also sufficient and meets the criteria of "feasible" for use in the training process, the researcher checks the final results of the data and concludes by taking the average of the two variables. After ensuring that each research process runs accordingly,

*Data collection*

*E-Module Validation*

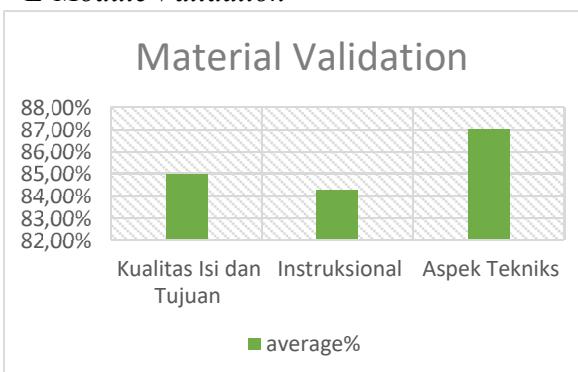


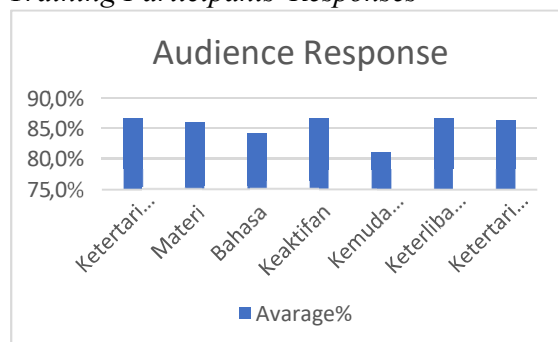
Figure 5 Material Validation Data Results

Referring to the image testing conducted by the researcher, the overall score is 86.2% in terms of material validation, so it is included as "very feasible" in terms of

the material used for the teaching process later. By involving instructors from technical backgrounds in teaching, field operations, and instructors who have been certified by the Directorate General of Civil Aviation, researchers can draw conclusions regarding the feasibility of the material, based on the results of data analysis.

The feasibility level of the module content measured using three indicators, namely; quality of content and objectives, instructional quality and technical aspects, is included in the "very feasible" category. The assessment aspect of the quality of content and objectives itself is in the feasible category because it reaches an average of 85%, when assessed from the overall value of each assessment indicator on the quality aspects of content and objectives. Furthermore, the instructional aspect reached the target of 84.3% or the feasible category. While the last aspect, related to the technical materials used, reached 87% or very feasible. So that related to the validity of the materials used for the training process, as well as the validity of the materials that will be disseminated to training participants and cadets can be categorized as very good.

#### Training Participants' Responses



**Figure 6 Data Results of Training Participants Response**

Based on the responses of the training participants, collected by the researcher through an audience response questionnaire which focused on assessing the responses of prospective training participants for helicopter landing officers presented with a sample of 37 Air Transportation Management cadets, the researcher obtained quite good results, namely 85.3% in the "very feasible" category.

The assessment conducted by researchers includes three assessment indicators with each assessment assessed through two positive statements through online media forms, namely categories; Interest 86.6%, material aspects 85.9%, language quality 84.2%, activeness 86.7%, ease 81.0%, involvement 86.7%, and interest in the training process of 86.2%. This testing process is carried out with the aim of knowing the responses and responses of respondents regarding the

use of media, including language, and accessibility that can be done by training participants.

#### Research Instrument Testing

- 1) Validation test results. The calculated  $r$  value which is the Pearson Correlation value obtained after processing using SPSS (Statistical Product and Service Solutions) software. It is shown that the calculated  $r$  value obtained has a value greater than the  $r$  table value of 0.325. Apart from the calculated  $r$  value, the significance value obtained is also smaller than 0.05. Thus it can be concluded that all statement items of the questionnaire method that have been tested for validity using Pearson Product Moment, both variable  $x$  and variable  $y$ , are declared valid. After the validity test is carried out using the Pearson Product Moment method, the reliability test is then carried out.
- 2) Reliability test results. The Cronbach's Alpha value was obtained after being processed using the help of SPSS (Statistical Product and Service Solutions) software. The proof is that the Guttman Split-Half coefficient value obtained is greater than ( $>$ ) 0.60 on variable  $x$  and variable  $y$ . So it is stated that the items of variable  $x$  and variable  $y$  can be declared reliable. So it can be stated that the items of variable  $x$  and variable  $y$  can be declared reliable.
- 3) Content validation test results. Referring to the questionnaire results and with the ACP calculation, the researcher obtained a final result of 85.83% and described as "very feasible" by taking the average of the instructor validation test indicator values. Testing the average congruency percentage is done by taking the average of the corresponding set of values and data. In this case, researchers used each value indicator as a benchmark for measuring content validity or CVI.

## RESULTS AND DISCUSSION

Based on the results of the final research project conducted by the researcher entitled "DEVELOPMENT OF THE HELICOPTER LANDING OFFICER EMODULE TO OPTIMIZE THE TRAINING PROCESS AT THE SURABAYA AIRPORT POLITEKNIK USING THE ADDIE METHOD", the researcher can draw several conclusions starting from the completion process, collecting respondent data, and analyzing data, to drawing conclusions from the collected data set. Here are some conclusions that can be drawn:

- 1) The process of working on the e-module using Canva media with the final form of video and reading media that can be accessed through the Surabaya Aviation Polytechnic LMS was successfully completed.
- 2) Based on the analysis of data collected by researchers related to the validity of the material and competencies in the Helicopter Landing Officer e-

module, 86.2% agreed with the statements in the questionnaire, so it can be advertised as "feasible", to be used in the institution's training process.

- 3) Based on the results of data analysis, the response of training participants regarding the use of e-modules in the training process reached 85.3% and fell into the "very feasible" category. So that the use of electronic media in the current training process is very supportive and quite good.
- 4) It can be interpreted by referring to these two indicators and the condition of personnel needs in the field, the training process at the Surabaya Aviation Polytechnic is still not optimal, as well as the results of response data and material validity, so research related to the preparation of the current HLO e-module, can greatly help training institutions to produce personnel to meet the needs in the field.

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