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Method Use Enhanced Cognitive Walkthrough (ECW) In Testing The Interface Design Of Student Interface Rating System Assessment Program

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Abstract – The appearance of an application has a major influence on user needs, a display that is in accordance with user needs will provide application users with ease in running the applications they use. To get good display results, we need a special design that must be designed before developing an application. In maximizing the results of making an interface design, a design test is needed that will assist in assessing the design that has been built based on user needs. The method used in conducting the test is the Enhanced Cognitive Walkthrough method which is carried out based on three stages, namely function investigation, TSK assessment and evaluation. The results obtained in testing the interface design of the assessment system for this internship program are that the system is quite easy to use by every user, whether or not they have ui/ux skills. However, new users need to use it for a little while to understand all the features and functions, because the interface still has shortcomings, especially features that are not clearly explained or visible.

Keywords – Enhanced Cognitive Walkthrough, user interface, evaluation

I. INTRODUCTION

The appearance of an application has a major influence on user needs, a display that is in accordance with user needs will provide application users with ease in running the applications they use. To get good display results, we need a special design that must be designed before developing an application. In maximizing the results of making an interface design, a design test is needed that will assist in assessing the design that has been built based on user needs. A good product will make users immediately understand the appearance and process with minimal manual instructions [1]. In conducting the assessment required a test or trial. Test is a technique used to carry out evaluation activities, in which there are several questions or a series of tasks that must be completed or answered by participants [2]. One method that can be used is the Enhanced Cognitive Walkthrough (ECW) method. This method focuses on the simplicity of learning with exploration based on the theory of exploratory learning. Users will try to perform tasks with the Trial and Error technique which describes the simulation of the user's cognitive processes when carrying out certain tasks [3]. Research on UI/UX Design of the My CIC Application for Student Academic Information Services Using the Figma Application was conducted in 2020, where this research resulted in prototype mobile apps that could be used by students [4]. One method that can be used is the Enhanced Cognitive Walkthrough (ECW) method. This method focuses on the simplicity of learning with exploration based on the theory of exploratory learning. Users will try to perform tasks with the Trial and Error technique which describes the simulation of the user's cognitive processes when carrying out certain tasks [3]. Research on UI/UX Design of the My CIC Application for Student Academic Information Services Using the Figma Application was conducted in 2020, where this research resulted in prototype mobile apps that could be used by students [4]. One method that can be used is the Enhanced Cognitive Walkthrough (ECW) method. This method focuses on the simplicity of learning with

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II. RESEARCH METHODOLOGY

The Enhanced Cognitive Walkthrough (ECW) method focuses on the simplicity of learning with exploration based on the theory of exploratory learning. Users will try to perform tasks with the Trial and Error technique which describes the simulation of the user's cognitive processes when carrying out certain tasks. Cognitive walkthrough assesses whether user knowledge is in accordance with instructions regarding the use of the system that leads to correct actions and goals (Effendi and Khasanah 1978). Cognitive walkthroughs were originally developed to bring cognitive theory closer to the development of practical design and evaluation of user interfaces. This method has three versions, the first version states that the evaluator gives a representative task in completing the task and describes the approximate background of the prospective user. As for the second version, the cognitive walkthrough was developed with a more complex and detailed procedure, the questions used were too general so they were considered too complicated, difficult to implement and time-consuming. The first and second versions of the cognitive walkthrough were considered less effective, so Lewis and Wharton developed a third version. The third version, Enhanced Cognitive Walkthrough (ECW) has three stages, namely: Preparation, Analysis, and follow-up. Preparation is the stage used in user identification, defining the task to be evaluated, determining the sequence of task steps to be carried out, and finding out how the User Interface provides information when the task is given. Analysis is used to process the results of the preparation stage. The process is carried out by selecting the task to be performed and the evaluator asking questions for each task or action sequence given. Follow-up is the last stage used to get improvement results so that it can be used as a recommendation for improvement. To achieve this goal, three additions to the Enhanced Cognitive walkthrough (ECW) were made:

1. The division of questions will be divided into two levels, to investigate the function and not just the operation.
2. Task assessment: assessment of answers will be carried out to assess success and failure, each answer will then be entered into several categories of types of problems.
3. Analysis of the results will be carried out by a matrix to see a better overview and possible comparisons between different interfaces.

III. RESULTS AND DISCUSSIONS

The results of the modeling carried out by testing are as follows:

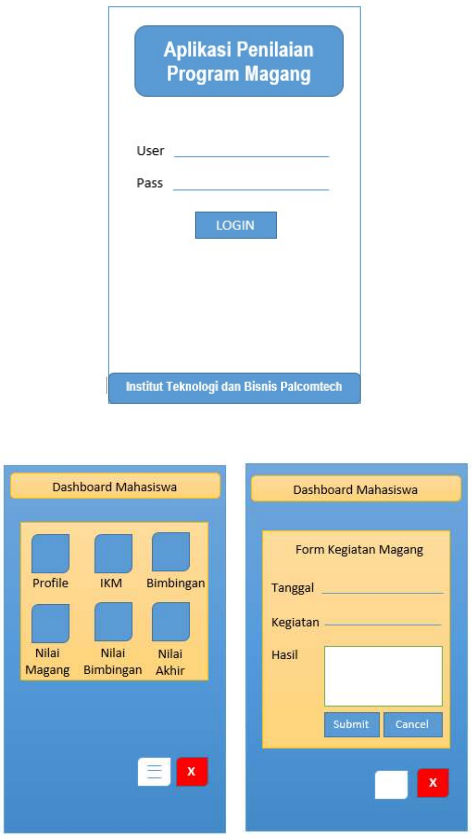

Figure 1. Tested interface

The data collection carried out by the researcher was using a questionnaire. The data was obtained by giving a questionnaire to the research sample. Questionnaire or questionnaire is a data collection technique that is done by giving a set of questions or written statements to respondents to answer [5]. The distribution of the questionnaire was done by meeting face to face. The population that will be used as research samples are student representatives and employee representatives of Maulagi Indo Solusi as an internship company.

The test uses the third version of the Cognitive walkthrough method which has 3 stages, namely Preparation, Analysis, and Follow Up. In the preparation stage, the stages that determine the sub-tasks and the evaluator while the sub-tasks are described using Hierarchical task analysis.

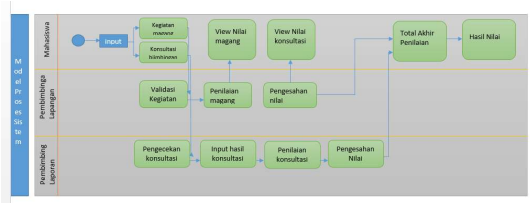

Figure 2. Application process model

At the analysis stage, the writer divides the task into 2, namely function analysis and operation analysis. From the results of analyzing the results of the data that has been obtained from the scenarios that have been carried out on the enhanced cognitive walkthrough method. The following is an analysis and discussion of the six (6) evaluators' interviews.

Problem seriousness (PS) is to increase the seriousness of the problems that arise when the evaluator is carrying out the task being evaluated. PS in this study consisted of PS 1, PS 2, PS 3 and PS 4. PS 1 represents the level of serious problems, where the probability of success is very small. PS 2 represents a fairly serious level of problems, where the probability of success being

carried out is quite small. PS 3 represents the level of light problems, the meaning of which is between success and failure. PS 4 represents a very light level of problems, which means it can work. Furthermore, task importance (IT) is the main task or must be carried out which is useful to facilitate the evaluator when evaluating the repaired task. The IT rankings are ordered from one (1) to four (4), where TI 1 is a mandatory task of 61 and must be done until TI 4 is a task that is not important to be done. The following are the results of the problem seriousness with task importance based on the results of interviews with six (6) evaluators consisting of 3 categories. The results will be shown in table 1 to table 6 showing the average results of all evaluators and colored red in the problematic column. where TI 1 is a mandatory task 61 and must be done until TI 4 is a task that is not important to do. The following are the results of the problem seriousness with task importance based on the results of interviews with six (6) evaluators consisting of 3 categories. The results will be shown in table 1 to table 6 showing the average results of all evaluators and colored red in the problematic column. where TI 1 is a mandatory task 61 and must be done until TI 4 is a task that is not important to do. The following are the results of the problem seriousness with task importance based on the results of interviews with six (6) evaluators consisting of 3 categories. The results will be shown in table 1 to table 6 showing the average results of all evaluators and colored red in the problematic column.

Table 1. PS and IT evaluators 1

	Problem seriousness (PS)			
Task importance	**1**	**2**	**3**	**4**
1	**0**	**0**	**0**	**0**
2	**0**	**0**	**0**	**1**
3	**0**	**0**	**2**	**3**
4	**0**	**0**	**0**	**0**

Table 1 is the result of interviews from evaluator 1 novice category. This table shows that the evaluators have problems in TI 2 and TI 3 with very mild problem categories. TI 2 shows 1 mild problem with a high probability of success, and TI 3 shows 5 very mild problems.

Table 2. PS and IT evaluators 2

	Problem seriousness (PS)			
Task importance	**1**	**2**	**3**	**4**
1	**0**	**0**	**0**	**0**
2	**0**	**0**	**0**	**3**
3	**0**	**0**	**1**	**3**
4	**0**	**0**	**0**	**0**

Table 2 is the result of interviews from the 2 novice category evaluators. This table shows that the evaluator has problems with TI 2 and TI 3. In TI 2, it shows 3 problems with a high probability of success, and TI 3 with 2 problem points with 4 problems with a high probability of success.

Table 3. PS and IT evaluators 3

	Problem seriousness (PS)			
Task importance	**1**	**2**	**3**	**4**
1	**0**	**0**	**0**	**0**
2	**0**	**0**	**0**	**2**
3	**0**	**0**	**0**	**4**
4	**0**	**0**	**0**	**0**

Table 3 is the result of interviews with 3 regular categories of evaluators. This table shows that the evaluator has problems in TI 2 and TI 3 with a mild problem category. In TI 2 shows 2 light problems and TI 3 shows 4 light problems.

Table 4. PS and IT evaluators 4

	Problem seriousness (PS)			
Task importance	1	2	3	4
1	0	0	0	0
2	0	0	0	0
3	0	0	1	1
4	0	0	0	0

Table 4 is the result of interviews with 4 regular categories of evaluators. Where the evaluator has problems at TI 3 with a category of 63 mild problems. TI 3 shows 2 problem points with 2 very light problems.

Table 5. PS and IT evaluators 5

	Problem seriousness (PS)			
Task iimportance	1	2	3	4
1	0	0	0	1
2	0	0	0	0
3	0	0	1	4
4	0	0	0	0

Table 5 is the result of interviews from the 5 expert categories of evaluators. This table also has problems in TI 1 and TI 3, in TI 1 there is 1 light problem point. For Dan TI 3 has 2 problem points with 5 levels of light problems.

Table 6. PS and IT evaluators 6

	Problem seriousness (PS)			
Task iimportance	1	2	3	4
1	0	0	0	0
2	0	0	0	0
3	0	0	3	5
4	0	0	0	0

Table 6 is the result of interviews from the 6 expert categories of evaluators. This table is similar to the evaluator table 5. For TI 3, it has 2 problem points with 8 non-serious problems.

Table 7. Average PS and PT

	Problem seriousness (PS)			
Problem type (PT)	1	2	3	4
U	0	0	0	0,166
H	0	0	0,666	1
T	0	0	0,166	2,5
S	0	0	0,166	0
P	0	0	0	0
F	0	0	0,333	0,333

table of average results from 6 evaluators for PT and PS. The average results that appear almost fill all the problem seriousness for the problem type. But the problem that is not too big is because certain functions are hidden or not visible on the system, this can be seen with the value of PS3 (0.666) and PS4 (1) for hidden (H). Then the lack of user experience in digital school books, this can be seen with the PS4 value (0.1666) for the user (U). Further significant problems are in the feedback (F) that the system gives to the user and the text and icon (T) which is misinterpreted by the user and (S) the unusual order.

The table on the problem type (PT) hereby task importance (TI) will explain the types of important problems that arise when carrying out a series of tasks or the main problems that are most important to be fixed. for problem type or PT 71, it is divided into six (6) sections, namely User (U), Hidden (H), Text and con (T), Sequence (S), Physical Demand (P) and Feedback (F).

Users come from the experience and knowledge of users. Hidden from the interface gives no indication that the function is available or how to use it. Text and icon originating from this placement, appearance and function can easily be misunderstood. Sequence derived from this function operations must be performed in an unusual order. Physical demands from the system interface require this skill to be experienced by the user at a level that is too high, for example strength, speed and so on. Feedback from the interface does not provide an indicator of what the user is doing or has been doing [6].

IV. CONCLUSION

The results obtained in testing the interface design of the assessment system for this internship program are that the system is quite easy to use by every user, whether or not they have ui/ux skills. However, new users need to use it for a little longer to understand all the features and functions, because the interface still has shortcomings, especially features that are not clearly explained or visible.

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