

Usability testing electronic rubric of performance assessment

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Abstract. Integrating technology in the assessment process facilitates the overall education process, for teachers, students, and educational institutions. Online Evaluation System is an e-learning application in the context of the “Learning Evaluation System” which is designed to facilitate the evaluation process. In creating a digital assessment tool, one needs to pay attention to the usability aspect as the key to success and as a user acceptance requirement for the application. In this research, researcher tested the usability performance assessment in the form of an electronic rubric to assess learning. Usability testing aims to determine whether an application is in accordance with the user needs or not. Usability testing uses an evaluation sheet in the form of a questionnaire, namely Use Questionnaire, a tool that can be used in the preparation of the questions that will be made in the form of a questionnaire. Testing was done by observing the user; how they used the application. The components tested consisted of components of usefulness, satisfaction, ease of use and ease of learning. The application tested was SmartRubric, an assessment application designed to facilitate the workload of teachers in carrying out the evaluation process. The test results show that respondents generally strongly agree with the usability aspect of SmartRubric application software. The research concludes that electronic rubric is a resource that facilitates assessment for students as participants in the assessment process. Students tend to be satisfied with the use of electronic rubrics in assessment.

1. Introduction

Online Evaluation System is an e-learning application in the context of the “*Learning Evaluation System*” which is designed to facilitate the evaluation process [1]. Development of Android-based assessment devices as an attitude in supporting the improvement of the learning quality, teachers must have knowledge and mastery in the field of technology. By this, they can contribute to the effectiveness of the development of assessment devices by using technology [2].

Web or android-based digital applications for learning usually have a very complex display interface with various layers of menus, thus web or android-based digital applications need to be designed and developed to be more attractive and *user friendly* so that they can be accepted by users [3]. There are still many web or android-based digital applications on the market that are difficult to use and learn due to the low *usability* rate [4]. *Usability* aspect is the key to success for such applications and it is also a user acceptance requirement for *mobile* applications [5].

Usability is a qualitative analysis that determines how easily the user uses an application's interface [6]. An application is called *usable* if its functions can be carried out effectively, efficiently, and satisfactorily [7]. Effectiveness is related to the user's success in achieving goals in using a



software. Efficiency refers to the smoothness of users to achieve these goals [8]. Satisfaction relates to the user's acceptance of the software [9]. *Usability* testing is done to evaluate whether an application is in accordance with user requirements or not [10].

Usability testing can be done by involving users or without involving users. Testing by involving users can provide direct information from users about how users use the system and the problems they face. This test consists of *Field Observation* (direct observation), *Questionnaire*, and *Thinking Aloud* [11] methods.

This research aims to assess the application of electronic rubrics conducted by *usability* testing. This electronic rubric application is used as an application in assessing student practicums. The integration of ICT in the assessment process makes it easier for teachers to recap and create student assessment reports. Therefore, to get an electronic rubric application that suits the needs of users, it is necessary to do *usability* testing.

2. Method

This research tested the *usability* of an application to see the feasibility of the SmartRubric application. SmartRubric is a web-based assessment application that provides convenience for teachers in carrying out practical assessment. The *usability* testing method chosen was by using *USE Questionnaire*[12].

2.1. Tools and materials

The application tested in this research is the SmartRubric application. This application has a Login, Assessment, Rubrics, Classes, Students, and Admin functions. This application can be accessed at <https://www.smartrubric.com/>. The measuring instrument used in this research was a questionnaire.

The respondents were 10 Tourism Teacher in a Vocational School. Respondents are accustomed to using mobile ICT (HP) media and have a good ICT *literacy define* and *access*.

2.2. Research flow chart

The *usability* testing flow follows Figure 1.

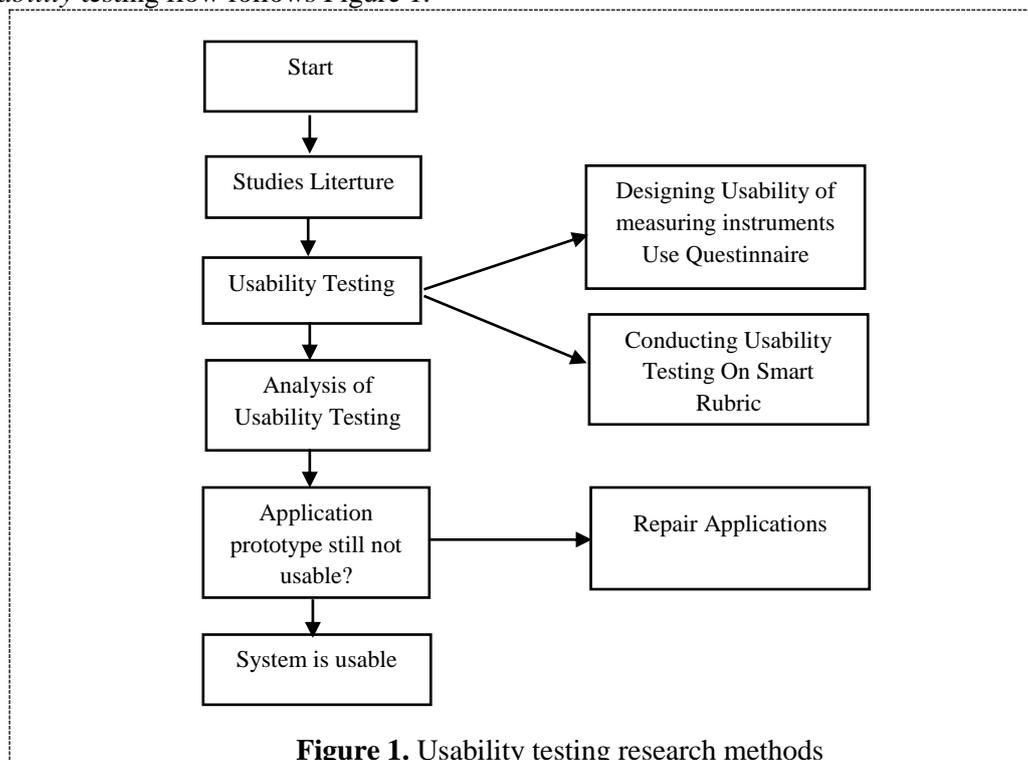


Figure 1. Usability testing research methods

2.3. Literature study

Search reference on a Electronic rubric, usability testing, Use questionnaire and likert scale.

2.4. Designing usability measuring instruments

Usability measurement instruments are adjusted to the usability component, namely the components of usefulness, satisfaction, ease of use, and ease of learning. The instruments for usability testing use an evaluation sheet in the form of a questionnaire, namely USE Questionnaire [6]. USE Questionnaire consists of four quality components, namely usefulness, satisfaction, ease of use, and ease of learning. The scale used in this questionnaire is a Likert scale which consists of four points to get ordinal data. The scale includes Strongly Agree (SS), Agree (S), Disagree (KS), Strongly Disagree (TS) [7].

2.5. Performing SmartRubric usability testing

Usability testing is performed on the Tourism Vocational School teachers to assess student competency during practicum assessment. The teachers uses SmartRubric when the practicum assessment takes place, then the teachers fill in the USE Questionnaire that has been developed by the researcher.

2.6. Analyzing usability data testing results

Analyzing *usability* data by using the average of *usefulness*, *satisfaction*, *ease of use*, and *ease of learning*, using the following formula:

$$Usability (\%) = \frac{Usefulness+Satisfaction+Easy\ of\ use+easy\ of\ learning}{4} \times 100\%$$

The data obtained is then converted based on the eligibility category table in Table 1.

Table 1. Eligibility Categories.

Number (%)	Classification
<21	Very Unsuitable
21-40	Unsuitable
41-60	Decent
61-80	Suitable
81-100	Very suitable

2.7. Improved application prototype

Improvement of the application prototype is done if the value of *usefulness*, *satisfaction*, *ease of use*, and *ease of learning* is low and this indicates that there are still many deficiencies in the application.

3. Results and discussion

Usability testing results declared function effectiveness is pretty good value, ranging from the login page, assessment, rubric, classes, and student. On page rubric of respondents prefer to use an existing template as compared to the new template, the template that is already there easier and more practical simply adjust the rubric developed. In inputting student must enter one by one respondent can not upload it directly, the facility to upload is limited to certain devices are not all the computer device can be used for the process of uploading the students. Broadly speaking classes and assessment for the page is good enough, the respondents did not experience problems in the use of application SmartRubric. The results of *usability* analysis on *usability* testing obtained a score of 84.27%. This value is influenced by the *usefulness* of respondents by 82.6%, *satisfaction* of respondents by 80.2%, respondents' *ease of use* by 85.5%, and *ease of learning* by 88.8%. After knowing the results of the observed score and the expected score, the measurement results obtained are equal to 84.27%. If these results are related to the interpretation of the scores in Table 1, the value of the feasibility percentage

of 84.27% is at intervals of 81 to 100% which indicates that the results of *usability* measurement of SmartRubric application have a value of "very suitable".

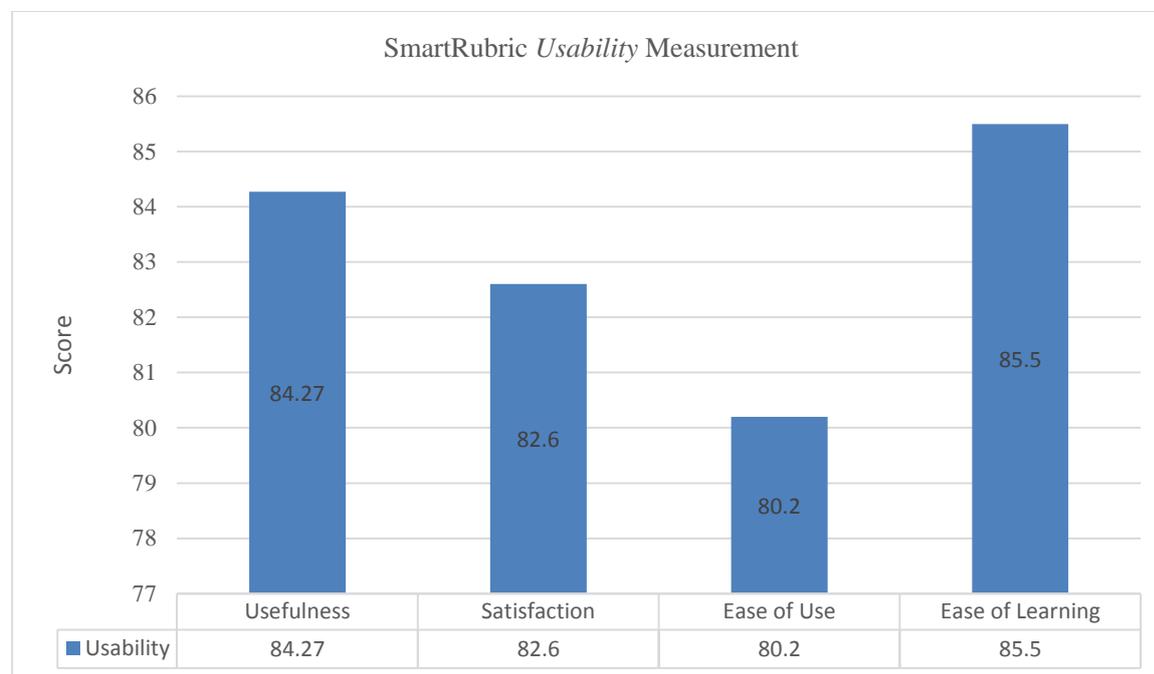


Figure 2. SmartRubric Usability Measurement

Usability can be measured by various parameters and measurement devices. One of the *usability* measurement instruments is the *USE Questionnaire* which is divided into 3 main parameters, namely *Usefulness*, *Satisfaction*, and *Ease of Use* [15]. But in its development, it is divided into 4 parameters namely *usefulness*, *satisfaction*, *ease of use*, and *ease of learning* [6]. *Usability* measurements are performed to assess user satisfaction in the application being developed [16]. *Usability* measurement results can be a reference for application development. Besides, *usability* testing can provide input from data and can be more objective. *Usability* testing can provide predictions of actual usage of an application (according to user requirements) [17].

Usability measurement in an application is performed as a way to see whether the system or application is in accordance with user requirements. *Usability* is the ability used to effectively assess an application or system that consists of five criteria, namely effectiveness, learning ability, retention, and attitude [18] [19]. Another important definition of *usability* is "a relationship of effectiveness and efficiency of the user interface and its reaction to the application interface or system [20] [21]." *Usability* testing on SmartRubric is used to see the effectiveness of using SmartRubric as a digital-based evaluation tool.

An electronic rubric is an alternative assessment tool that helps lecturers determine and explain to students what needs to be achieved during the learning process using predetermined performance criteria [22][23]. Students can monitor the process and the progress of competencies to be achieved and how to improve when those competencies have not been achieved [24]. The electronic rubric can specifically describe the characteristics of the learning outcomes achieved by students (products and assignments) as well as the level of performance that must be achieved by students. Before the assessment process takes place, the lecturer or instructor provides information on what standards must be achieved, how the performance appraisal process looks like, and feedback is given to them [25] [26] [27].

4. Conclusion

Usability testing on Electronic Performance Assessment Rubric carried out as a key to acceptance of the application by the public. This test is done as a key to success of the acceptance of this applications by the community. *Usability* test results provide some important input regarding the level of *usefulness, satisfaction, ease of use, and ease of learning* of the application. This input is used as a guide for application improvement. This shows that *usability* testing is important in developing applications to get input from users so that applications can be accepted by users.

5. References

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