The Development of "Ayo Membaca" Android Application for Reading Assessment

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Abstract—**The growth of information technology encourages the use of a smartphone in every aspect of life including the evaluation on education. Therefore, an innovative technology is needed to ease the process of reading assessment through the technology acceptance model, the acceptability level of information technology use and how the end-user of a technology perception will be reached. The purpose of this study is to know and describe how the individual acceptance on the use of "Ayo Membaca" app for reading assessment on primary students in Surabaya. Through Research & Development approach adapted from the Borg & Gall development model, the application is designed in several stages: preliminary study, research planning, initial product design, initial test, product revision, small-scale trial, product revision, broad-scale test, product revision end, and dissemination. The instruments used to collect the data are questionnaire validation expert, documentation, and online questionnaire user. The data obtained are analyzed descriptively and quantitatively by using a multiple regression. The results show that 1) this app is recommended to be used with a little revision, and 2) this app is effectively used in reading assessment based on user response with high perceive in usefulness and the ease.**

Keywords—"Ayo Membaca" Apps, Technology Acceptance Model, and Reading Assessment

I. INTRODUCTION

The development of information technology happens very rapidly in the decade especially in the use of an Android-based smartphone. This condition affected the high usage of this media including in educational field. One of the innovative technology used on education purpose is the application of "Ayo Membaca" which is famous as an Android-based smartphone with Technology Acceptance Model (TAM) for Reading Assessment. For students at the primary level, reading is one of the basic literacy competencies [1] that should be mastered because their capability in reading will help them to learn and acquire the new knowledge and skills. For example, science is an important knowledge, and the students need to gain the knowledge through reading a science book. Students also need to improve their skills through the demonstration of what they know, and acquire a reading skill to integrally tied their knowledge to their skills.

To achieve students' competence in reading skill, the teacher needs to find out an appropriate program and reading strategy regarding the students' need. Therefore, the teacher should design such a reading instrument to map the students' reading level in order to design an appropriate reading program. It is as Terry Overton states [2] that assessment is a process of gathering information to monitor progress and make the educational decisions if it is necessary.

To get a valid result of this assessment, there are some aspects that should be considered as follows: comprehensive, continuously, purpose-oriented, objective, educate, significance, and conformity. To get a more effective reading assessment, the use of technology is chosen. It is because of a fact that today's off the shelf reading assessments have been criticized for various reasons, and so has the process of designing them (Innovation in Reading Assessment). On many tests conducted, the assessors' subjectivity seems high so the test is measurement-driven and was not able to provide clear and specific information about students' competence in reading. Therefore, an innovation in information technology which is used for reading assessment is needed. Conceptually, the use of information technology should fulfill perceived usefulness and perceived ease of use [3].

The success of information technology used not only depends on how the technology could be operated well but also depends on the perceptiveness of the user. Unfortunately, the application which is able to use for reading assessment is still rare. Therefore, the development of "Ayo Membaca" app hopefully will ease the process of reading assessment and the results could be used and reported.

Based on those explanations, this study is addressed to know and describe how individual acceptance on the use of "Ayo Membaca" app for reading assessment on primary students in Surabaya.

II. REVIEW OF LITERATURE

"Ayo Membaca" app has been developed through the Technology Acceptance Model (TAM) to know and describe how individual acceptance on the use of information technology system in reading assessment. TAM was developed using a behavioral theory which almost used to identify the process of information technology adaptation.

Based on the concept of Theory of Reasoned Action (TRA) it is believed [4] that reaction and perception will determine peoples' attitude and behavior. TAM was developed by considering that behavioral intention to use information system is determined by two beliefs: Perceived of Usefulness (POU) and Perceived Ease of Use (PEU). POU was defined as the extent to people was sure that the use of the system will improve its performance. While Perceived ease of use (PEU) was defined as the extent to people was sure [5] that the system is easy to use. The model was shown as follows:
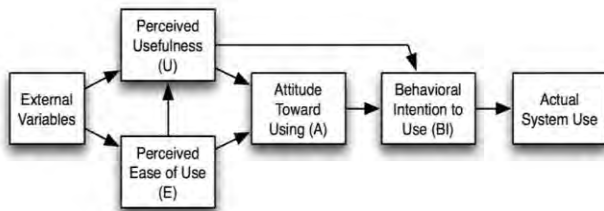

CHART 1: TAM MODEL

On the chart above, it could be seen that the main key of TAM is on the external variable which impacts to the perceived of usefulness and perceived ease of use. This model was generally used and developed by some researchers e.g. Szajna (1994), Igbaria et al, Vankatesh and Davis (2000). In 2002, Venkantesh modified this model by putting down a variable trust entitled "Trust Enhanced Technology Acceptance Model" that focused on the relationship between variables and trust. Another modified was Trust and Risk in Technology Acceptance Model (TRITAM) that used a trust and risk variable and TAM (Lui and Jamieson, 2003).

The model [5] that was almost received by the user was a model developed by Davis (1989) which was known as the Technology Acceptance Model (TAM). This model considers 2 aspects they are the intention to use and the behavioral intention. The intention to use covers the perceived usefulness and perceived ease of use while behavioral intention includes attitudes, the subjective norms, self-efficacy, and technology support.

David states [6] that usefulness is a level in which people believe in the benefit of using a subject or a tool. The benefit of using information technology could be believed by the user if they know that it gives a positive impact on them. While ease of use defined where one feels confident using the system which does not require any effort. It is as a study by Klopping and McKinney found that a person's desire to use a system is affected by perceived usefulness in which a person perceives benefits of the system used. Other researchers found a positive relationship between perceived usefulness and intention to use a system. Venkatesh and Davis also state that TAM is believed as the best concept in describing how people-user perceived a new information technology.

III. METHOD

This research uses Research and Development (R&D) adopted [7] from educational research Borg & Gall. The stages of the research described as follows: 1) need analyses, 2) research planning, 3) preliminary form of product, 4) preliminary field testing, 5) main product revision, 6) main field testing, 7) revision of product, 8) operational field testing, 9) final product revision, and 10) dissemination and implementation.

To do need analyses [8], the first step conducted is determining the achievable indicator of reading skill and identifying the conceptual framework of the application through TAM. The process of identifying the conceptual framework is addressed to fix the suitability of achievable reading competence and the readiness of the application is used. After the product was designed, it needs to be validated by the experts in information technology and evaluation in Bahasa. The feedback is considered to revise the application whether the application is practicable or not. The next step is preliminary field testing. This step hopefully gives information whether the application is effective or not as a tool for reading assessment.

After conducting validation and revision, the application is ready to be implemented in the scope of individual users, small-group used, and large-group used. The purpose of conducting the main-field test in R&D is to determine whether the product meets its performance objective or not. After the final product designed, it is disseminated for a large group used that was 85.000 madrasah-Islamic primary schools in Surabaya. The research sample is 45 people.

Based on the implementation, the data obtained is related to the ease of use and the usefulness. The instruments used to collect the data are questionnaire validation expert, documentation, and online questionnaire user. The data obtained are analyzed descriptively based on the comment and suggestion for the improvement of the product. While to know the user acceptance, the data related to the ease and the usefulness of the product is analyzed quantitatively.

The indicator used to describe the user acceptance is easy to learn,[5] easy to get to the purpose, clear and understandable, flexible, easy become skill full, and easy to use. The answer of the respondents will be measured used Likert Scale with the interval of 1 to 5.

IV. RESULTS AND DISCUSSION

The "Ayo Membaca" app is implemented and used to assess 85.000 students at the primary school in Surabaya. This app has been used during the time of 2015 up to 2018. Based on the comments and suggestion from the questionnaire validation expert, the final product has characteristics as follows: 1) the application is offline-based, 2) the content is designed to assess students' ability in pronunciation, fluency, and reading comprehension, 3) the app "Ayo Membaca" version 2.2 has a more attractive look with timer features on each reading level.

The end product generated in this development is the "Ayo Membaca" app, an Android-based app that can be used to

measure students' ability to pronunciation, fluent, and understand in reading at primary level. Based on the recommendation of the validator expert, this app could be used with little revision. The view of the apps shows as follows:
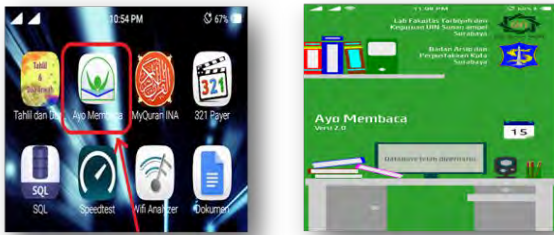
PICTURE 1. SCREENSHOT OF DESKTOP VIEW

The features of the app while processing the reading assessment described as follows:
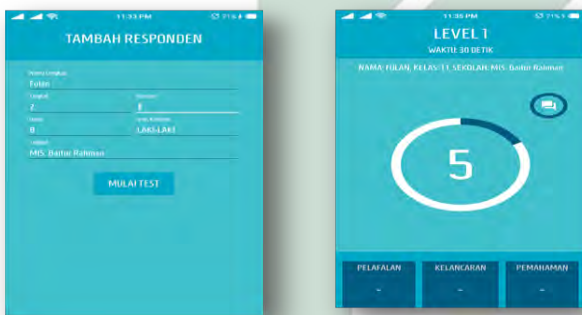
PICTURE 2. SCREENSHOT OF READING ASSESSMENT

The picture above is one of the views of the reading level achieved by students on reading assessment. While the users' acceptance of the use of "Ayo Membaca" app for reading the assessment of primary students in Surabaya described on the table below:

TABLE I. USERS' ACCEPTANCE ON THE USE OF "AYO MEMBACA" APPS FOR READING ASSESSMENT

Variable	N	Minimum	Maximum	Mean
Perceived ease of use	45	3.0	5.0	4.1
Perceived of usefulness	45	2.7	5.0	4.1
Acceptable	45	2.4	5.0	3.8

Based on the data above, it is shown that the minimum score of users' perceived ease of use is 3 which means a neutral answer. While the maximum score is 5 which means that the respondents strongly agree with the statement on the questionnaire. Meanwhile, the average score on users' perceived ease of use was 4.1 which means that this app is easy to use for reading assessment. Regarding the perceived of usefulness, the average score is 4.1 which also means that the respondents was agree that this app was useful to support the reading assessment.

That result indicates that the ease of use in using "Ayo Membaca" app encourages users to feel the usefulness of this app. It is in line with a previous research conducted by Compeau and Higgins which found that a critical stage implementing information technology was the perceiveness and unperceptiveness of the users. Another research by Szajna also found [9] that perceived usefulness and perceived ease of use was significant to describe the attitude toward use, intentions to use, self-report usage, and predictable usage. Chin and Todd on [10] their research also focused on a study about the effectiveness of using Structural Equation Modelling (SEM) with TAM. That research concluded that perceived usefulness is a valid construction. Those researches figure out that TAM made the use of information easier for the user as stated by Venkatesh and Davis on their research.

The different perceives of usefulness and the ease of the technology will disturb the implementation of the technology. Therefore, it could be stated that this application is effectively used in reading assessment based on user response with high perceive in usefulness and the ease.

V. CONCLUSION

Based on the research findings, the result indicates that the development of "Ayo Membaca" app has fulfilled two criteria of TAM that are perceived ease of use and perceived usefulness.

Based on the questionnaire validation expert, this app can be used as an instrument to assess students' reading ability. Otherwise, this app is offline based so the next researcher may develop an application of reading assessment which is online-based which consider another aspect of TAM that is behavioral intention includes attitudes, the subjective norms, self-efficacy, and technology support.

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