

Development of Peer Tutors Learning Media based on Android Application to Improve Learners Independence

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Abstract—This study aims to develop peer tutoring learning media based on Android applications to improve learners' independence. The alternative taken to achieve this goal is to apply peer tutoring learning media based on Android applications with emphasis learners learning independence especially life skills subjects. The development of this learning media is based on the facts and the thought that the learning process implemented tends to be very conventional and has not used an Android-based media. Tutors also have not optimized the potential of learners to share experiences in meeting learning needs. The research method used is research and development with the following steps: (1) a preliminary study to research and collect information and literature to develop of learning media, (2) compiling conceptual learning media to develop the prototypes and (3) conducting limited trials on the learning media. The results showed that the weakness of tutors used of instructional media was due of the limited availability of Android application-based media facilities owned by community learning centre (CLC), namely: (1). 47% tutors have never made an Android application-based learning media that fits to the learner's characteristics, (2) 80% tutors did not organized learners to use learning media, (3). 47% tutors did not use media that is suitable with the learning objectives. This condition led to the need of the development an Android application-based peer tutoring learning media as a learning model using Mobile Phone at the teaching and learning process. This method is a kind of learning strategy to improving the learning independence activities of learner's inequality education program at the CLC.

Keywords—learning media; peer tutor; Android; learning independence

I. INTRODUCTION

Everyone has the right to learn and develop through education, both on formal and non-formal education. Educational and learning activities is a process of transferring knowledge and skills from instructors to learners [1,2]. The problems that often faced by learners in learning on equality education are: (1) lack of clear information about how the correct learning strategies in learning group, (2) lack of understanding of the material (3) the variety learning objectives according to the learners characteristics, (4) the lacks learners opportunity to determine the learning model and strategy according to their characteristics, (5) the learning media used

do not provide opportunities to share learning resources and optimallize interact at their environment [3].

To solve that problems, it is necessary to design learning media which is more innovative and provide learners the opportunities to solved the learning problems they faced independently. Learning innovations that will be applied in equality education activities are peer tutoring learning media based on Android applications. Media peer tutoring learning is a learning approach that uses information technology-based learning media. Users are learners and tutors. The goal is to make changes in understanding, meaning, and behavior of learners in carrying out learning tasks within the Community Learning Center (PKBM). Tutors who will implement Android application-based learning media in study groups are group friends especially in skills subjects [4]. The procedure in peer tutoring learning is to select and train one student taken from the learning tutor who is considered potential, better and have ability than the other group members to become tutors and at the same time carry out learning activities in their learning groups [5].

Media peer tutoring learning based on Android application is intended to increase the independence of the learning community so that there is a change in the learners themselves in each learning activity. Focusing on learning with media peer tutoring based on Android applications this emphasizes more on efforts to increase the independence of learners by providing opportunities for learners to share about learning material. Peer tutor learning based on Android applications is expected to be able to encourage learners to be independent. Therefore, there are at least three important bases in the use of peer tutoring learning media based on the Android application, that were learning to be meaningful, learning how to learn, and learning how to live together [6].

The rapidity of information technology and smartphone devices which are vital communication needs direct people to have smartphones for communication needs. This is in accordance with the opinion [7]. Which states that mobile technology increasingly needs to be used in the learning process [3,8,9]. In the Equality Education Program, that Android applications are very suitable to be applied to facilitate learning [10,11]. Because through Android application-based

media development learners can learn wherever and whenever this condition is very relevant to the characteristics of adult learning.

Android is an open operating system that is aggressively polarized by Google. Mcknight et al., [12], Sharp et al., [11], Tabuenca et al., [9] explain Android is an operating system for Linux-based mobile devices that includes operating systems, middleware and applications. Android is an open platform that allows developers to create their applications. Historically, the Android operating system has gone a long way since first introducing the Open Handset Alliance at the end of 2007 [13]. The presence of Android brings benefits to the educational practice. By packaging teaching materials into electronics that are compatible with Android, the role of educators is not too dominant. Learners can learn intensively to achieve their competencies.

Technological advancements make the emergence of various Android-based applications ranging from games to learning media. The Android application as a media has been used in various learning and educational activities. This application has become part of children's daily lives, which cannot be prevented, and it runs naturally. Research results Prameswari [7], Siddiqui [4] about the use of Android in children's education shows that it is very important to equalize the perceptions of parents with children's hobbies on Android, because children's interest in applications as a new media in learning, can provide learning motivation for children. The equation of perceptions between parents and children's interests that Android applications can be used as new media in learning can provide motivation and self-development in children.

The use of Android-based learning media also requires the ability of learners to manage time so that the activities& independent learning can have a positive effect. The results of research carried out for participants on Android-based online courses showed the need for learners' ability to regulate the use of channel variations, content, and patterns of learning time designed by learners [9].

II. RESEARCH METHODS

A. Research Methods

The purpose of this study is to describe the development of Android application-based learning media in increasing learners' learning independence. Using a research and development approach, education is a process to develop and validate educational products in the form of learning goals, methods, curriculum, evaluation, both hardware, software and methods or procedures. The ultimate goal of research & development in the field of education is the birth of new products to improve the performance of education and learning work. Thus the learning process becomes more effective and/or more efficient, and in accordance with the demands of the needs. In this study, it was taken through three stages, namely as follows:

1) *Preliminary study*: The preliminary study is conducted to find out and explore the learning media used in the equality program organizer. Issues explored in the preliminary study

include (1) the media of learning that is used. (2) learning methods and strategies conducted by organizers and tutors, (3) participant activities in learning activities participation, (4) the role of tutors in controlling learning and management, (5) learning activities desired by learners, (6) assessment learning activities, (6) follow-up learning.

In the preliminary study, the data collection method used was participatory and nonparticipatory observation, in-depth interviews and documentation studies. Data analysis uses descriptive techniques, namely describing the phenomenon of current learning implementation in the institution that organizes learning.

2) *Compilation of conceptual models*: The development of conceptual learning media is done by procedures (1) determination of media prototypes based on theoretical information, and (2) expert validation and practitioners. Determination of media design is done by critically examining the results of preliminary studies and previous field exploration, drawing on prescriptions from the literature review of Learning media, especially the theory and practice of learning in the organizing institution. The findings of the media were, then tested for accuracy and implementation by involving experts in peer tutoring learning media to construct the media. The components developed model consist of (1) Learning Program Plans, (2) Learning Materials, and (3) Learning media, and (4) learning management which includes the role of learners, the role of tutors in learning, strategy, media, assessment and follow-up of learning activities.

The method of data collection used is a questionnaire and in-depth interviews and focus group discussions. Data analysis techniques use triangulation and verification with credible data sources and data auditors.

3) *Tools and substances of learning media to be implemented*: Development of instructional media and substance is done by procedures (1) identification of media devices and contents, (2) development of media tools and substance, and (3) expert validation and testing of media devices. Identification of the device and the substance of the model is done by analyzing the characteristics of learning media and increasing the independence of learners. The media was tested on 30 learners (2 groups, 15 learners each) equality education in 2 PKBM institutions. The data collection methods applied were questionnaires and interviews, as well as focus group discussions. Data analysis techniques using triangulation and verification with credible data sources and data auditors. Output target to produces a peer learning media based tutor on Android applications, to increasing the independence of learners equality tested.

B. Location and Research Subject

Location of this research is at 2 Centers for Community Learning Activities. 1 state-owned PKBM institution and 1 private institution. The subjects of this study were 30 learners who were selected according to the research objectives and 2 of

the equality education tutors who actively carried out learning in 2018/2019.

C. Data Analysis Technique

The stages in the research and development process are known as the cycle as revealed by Borg and Gall [14], are as follows: (1) researching the results of research related to products to be developed, (2) developing products based on research results, (3) field testing, and (4) reducing deviations found in the field trial stage.

Analysis of the data used is divided into several stages, namely: (1) the work of writing data, (2) editing, (3) classifying data, (4) reducing, and (5) interpretation. Based on the data analysis plan, the data analysis technique is carried out in two stages, namely:

1) *First phase data analysis*: The first phase of the research data analysis, related to the preliminary study, was conducted qualitatively. Qualitative data analysis is intended above, as a whole to describe the results of the preliminary study as one of the important components to determine the design of the learning model developed.

2) *Second phase data analysis*: Data analysis at this stage uses qualitative procedures by identifying factors that will conceptually be constraints in the application of designed learning media. Analysis data is to see objective conditions on the views of learners, tutors, and experts. The results of this analysis can be used as a guideline, invalidating the initial learning media to increase the independence of learners.

III. RESEARCH RESULTS AND DISCUSSION

Based on the results of data collection in a preliminary study of the ability of tutors in learning using Android-based media applications on Equality Education in PKBM. Then the following information is obtained: The *first* aspect of learning planning includes:

- There 70 % student who has a device with an Android system and 30% states that they do not have.
 - There 20 % A tutor who never identifies subject topics, 30% sometimes and 50% always identify the subject topics.
 - There 53% tutors have the ability to design Android-based learning media, and 47% stated that they had not been able to design Android-based learning media.
 - There 30 % tutors who has ability to create a learning media storyboard that contains instructions on the use of media, presentation of material to be aired in the media, material conclusions and summative and formative evaluation sheets available on 30% Android-based learning media.
 - The ability of tutors to make independent learning contracts, 50% said they were able to create independent learning contract and 50% stated that they had not been able to.
- Tutor systematically composes learning material using Android application-based media: 20% state that they always arrange subject matter conventionally and 80% state that they only sometimes arrange electronic-based learning material.
 - Compatibility learning media with the characteristics of learners. 50% said that they always made media that was in accordance with the learner's characteristics, 30% sometimes and 20% never made learning media that matched the characteristics of the learners.
- Seconds*, aspects of learning organizing, can be described as follows:
- Organizing learners in using instructional media, only 20% stated never, 60% stated that sometimes they did, and 20% always organized learners in using of learning media.
 - Setting learning activities using based Android Application. Respondent stated that 10% always regulate learning activities using the learning media based Android Application. 60% sometimes do and 30% never arranged.
- The third*, aspects of the implementation of the learning process can be described as follows:
- Learning media compatibility with the characteristics of learners. From the number of tutors observed, 40% never used an Android application-based learning media that matched with the learner's characteristics.
 - Determination of using learning media. From the number of observed, it shows that 50% sometimes use media in learning.
 - Respondents observed, 40% stated that media was used by learners.
 - The use of media is in accordance with the purpose of learning, only 53% of respondents stated that they always use the media in accordance with the learning objectives.
 - Using methods according to the learning media used, 50% of respondents stated that they only sometimes use methods in accordance with the learning media.
 - The use of Android application-based media in accordance with the characteristics of learners, 50% of respondents stated that they always use Android-based media applications in accordance with the characteristics of learners.
 - Learners are actively involved in learning, 70% of respondent's state that learners are active in learning.
 - There is reinforcement from peer tutors, 70% of respondents always get reinforcement from peer tutors.
 - The use of language in learning media is easy to understand, 70% of respondent's state that the language used in learning media is easy to understand.

- Media contains the substance of the subject matter to be taught, 60% of respondents stated that they always use media that contains the substance of the subject matter.
- The atmosphere of learning by using media is very dynamic, 50% of respondent's state that there is always a dynamic learning atmosphere with the use of media.

The fourth, aspects of learning assessment, the results can be described as follows:

- Media learning helps clarify learning material, 40% of respondents stated that they always help clarify learning material.
- Learners received feedback immediately after answered questions in the media, 100% respondents stated that they immediately received feedback.

A. Conceptual Model of Learning Based on Android

Android-based Learning Media is a learning need that is relevant for today's modern society because Android-based learning media have the flexibility that matches the characteristics of equality learners who are adults. Pujiriyanto expressed the opinion that the development of technology very influenced the development of the learning process, especially in the delivery system through the use of new generation media [8].

The need for communication using a smartphone device is very high, so the operating system in communication devices continues to increase. The development of information technology is in line with the development of teaching materials integrated with smartphones. The increasing number of people who use mobile devices makes the opportunity for the use of mobile technology devices more open in the learning process. not stay in one place or learning activity that occurs when learners make use of mobile technology devices.

The procedure adopted in implementing this learning model Based-Android application, the steps are as follows: (1) convey the objectives (competencies) to be achieved, (2) describe the material briefly; (3) explain the steps in using a media application based on Android, thus providing a learning experience to learners, with using of media- facilitating learners to conduct independent learning; and (4) conduct independent learning by using a mobile phone (HP) on learning implementation.

Giving an experience in learning based on the Android Application is directed to increasing the independence of both the dimensions of knowledge and skills using HP contextually in conducting learning activities. Learners act individually or in groups through collaborative work with tutors in carrying out learning activities with steps: (1) carefully listening to material descriptions; (2) conduct learning activities using HP according to the material taught by tutors; (3) conduct independent learning by using HP in this learning activity through the steps: (a) turn on the Android cellphone, (b) carry out independent learning, (c) operate the HP to use the Android application, and (d) plan stage next learning independent. The steps taken aim further to increase learners' independence in actual learning.

Study strategies like this are expected that learners can do independent learning, and actualize things experienced in daily life. Thus learners will be more confident and strive to develop independence in learning according to experience in using learning based on Android application.

The scheme of the steps of learning activities using Android application-based media to improve student learning independence can be described as follows:

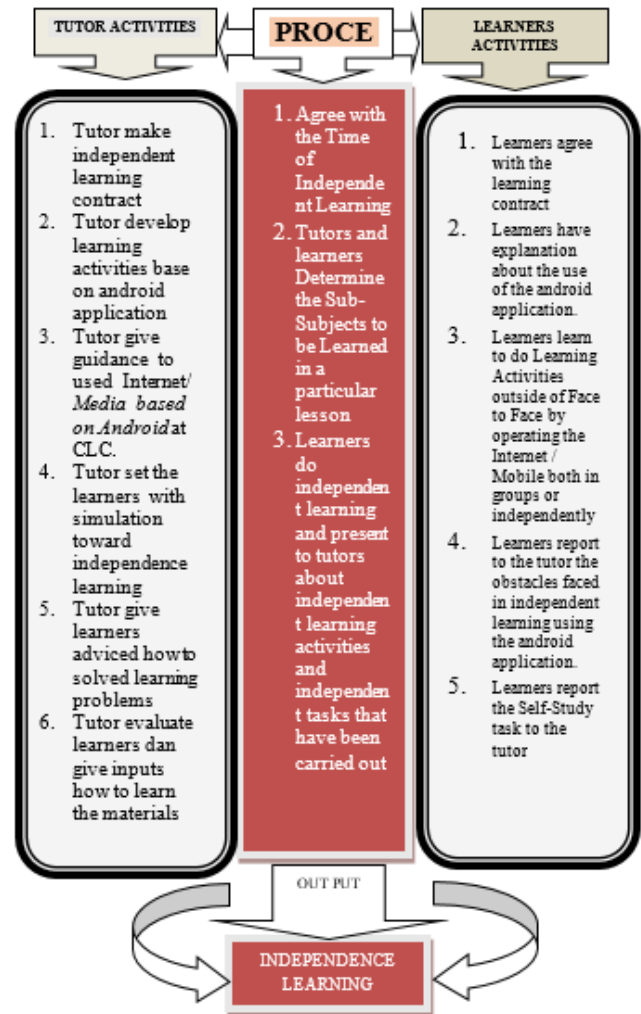


Fig. 1. Steps of peer tutor learning model based on Android applications to increased learning independence.

This peer tutoring learning can be interpreted as a process of transferring knowledge and skills through the use of group dynamics, in increasing the independence of learners. In this case, the instructor or group learning is that peer. In the research that will be conducted later, the learning strategy is centered on the activeness and dynamics of these peer groups for the control and supervision of the core tutors. The success or failure of these learning activities will, of course, depend on the presence or absence of the group dynamics [15].

The strong influence of conventional peer tutoring resulting in weakening individual ties with parents, schools, conventional norms. Another impact is that much time spent

outside of the home with peers rather than parents is one of the main reasons for the importance of peer roles for individuals. The important role of peer tutoring towards individuals relating to attitudes, speech, interests, appearance, and behavior of adolescents often mimics that using the same clothing model with popular tutor members, the opportunity for him to be accepted by peer tutors becomes large [5].

Peer group strategy is a method of learning that is done by empowering learners who have high absorption from the learners themselves to become tutors to their friends, where the selected learners are assigned to provide learning and training material to their friends. In the group that does not understand the material/training provided by the Tutor with the rules agreed upon jointly between the tutor and learners, so that the learning atmosphere of a cooperative tutorial is not built up & competitive [16].

Based on the study of the development of the concept, then peer tutorial learning based on Android applications can improve learners' independence. The success of learners is determined by an increase in learning independence through the role of peer tutors in designing and implementing learning strategies effectively and efficiently and utilizing all the potential that exists in their environment, both in study groups and in society [8].

IV. CONCLUSION

The use of Android-based media on equality learning in CLC is still weak based on findings indicators: (1). suitability aspects of making Android-based application learning media with the characteristics of learners, showing 47% never made an Android-based application-based media learning that matched the characteristics of learners. (2) the use of instructional media shows that 80% do not organize learners in the use of instructional media, (3). the use of media in accordance with the learning objectives shows that 47% never used the media in accordance with the learning objectives.

Android application tutor learning conceptual media development based on improving the learning independence of equality learners has gone through an expert assessment feasibility test, for establishing eligibility model the hypothesis of an Android application-based learning media that is ready for more extensive testing.

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