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# Android-based monitoring applications of students' learning outcomes

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**Abstract.** The purpose of this research is to develop a monitoring application of student learning result based on android mobile. Data were obtained from the questionnaire validation of product development by the experts of content, media, language, teachers and 40 parents. Data were analyzed using quantitative descriptive analysis. The results show that the application of the android-based monitoring learning result is worthy to use and has met the prerequisite in the fields of content, media and language. In the practical aspect, users (teachers and parents) have no difficulty during operating monitoring applications of students' learning outcome and parents find it easier to monitor their children's learning outcomes wherever they are. However, the development of media experienced some difficulties such as data transfer process. Monitoring application of student learning result is very helpful for parents who have hectic job.

## 1. Introduction

Monitoring the result of learning is one of the processes that must be done regularly by teachers and parents in controlling the result of learning that has been achieved by students. So far the monitoring system of learning outcomes refers more to paper-based report cards given every 3 months. Monitoring can also be done only if parents are willing to pay attention to student learning every day. But for parents who work and are unable to control every day, will cause the lack of control of parents to students' learning outcomes. Though parents play an essential and important position for children so that greatly affect students' learning outcomes [1] [2] [3] [4]. When parents are not able to control every day of student development, then the improvement and analysis of student learning difficulties will be even more difficult to do.

On the other hand the number of parents who take advantage of android smartphone can open opportunities to make an innovation in school information systems. School information systems can be utilized to facilitate the relationship between the school and parents regarding the development of children's learning outcomes in school, provide a good enough effect in improving the learning process [5], make students more satisfied and interested in learning [6], students become more independent [7], students' creativity [8], improving students' learning outcomes and preventing students' misconceptions [9], facilitating teachers in learning [10], students' learning motivation [11].

School information technology has been developed in several lessons such as the development of electronic evaluation learning in mathematics [12]; e-learning [9] [13] [14] [15], e-rubric assessment

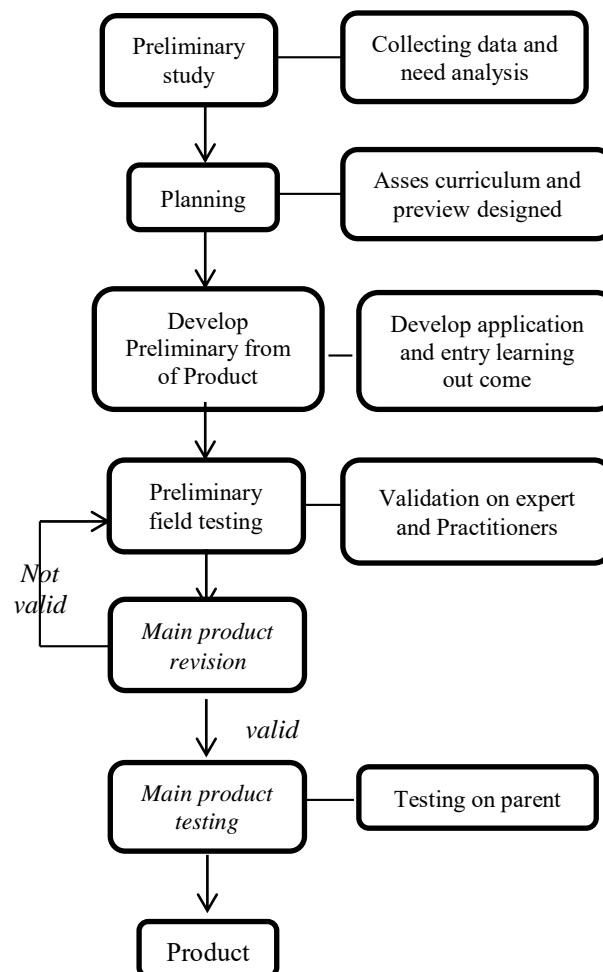


[16], online Assessment for high education [17], multidimensional e-assessment [6], online course [18] [19], Digital worksheet based mobile learning [20] [21], and blended learning based android [22]. However, so far there has been no development of android system for monitoring application of student learning outcomes that can be accessed online or open by parents. There are only a handful of openly accessible assessment systems, such as college entrance test scores or favorite school admission scores, for regular online monitoring application still has not been developed. Yet nowadays many parents are working, so parents are unable to assess the progress of learning and monitor the results of their children's learning continuously to come to school.

Based on the above explanation, the objective of this research is to develop a monitoring application of student learning outcomes based on mobile android that is valid and can be used practically by parents. It is expected that the products of development can facilitate the parents in monitoring the learning outcomes of children in school and able to inform the students' learning outcomes to parents quickly. This application is developed in accordance with the concept of curriculum learning that develops today in Indonesia contains achievements of learning results that consist of the spiritual value, the social value, the knowledge value, and the skill value.

## 2. Method

Stages in this study are described in figure 1:



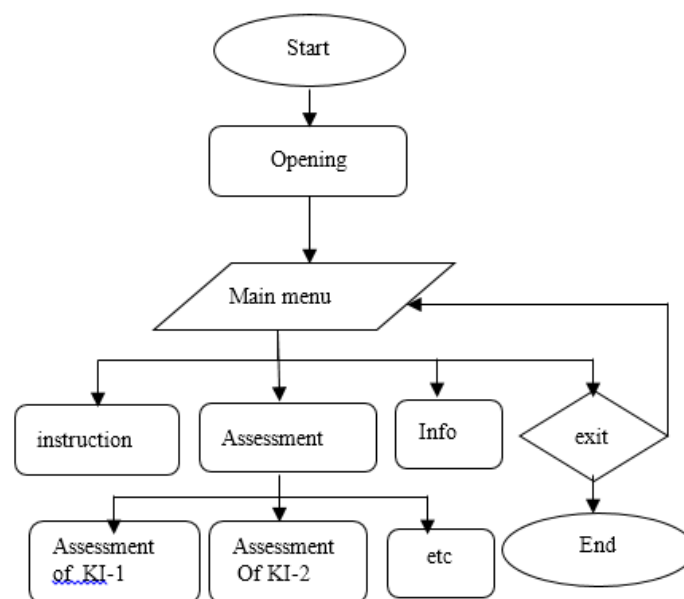
Source:[23]

**Figure 1.** Stages of study.

The research stages consist of: 1). Preliminary phase study, it is to conduct needs analysis in the field. Needs analysis is done to see the problems and analyze the need in learning in primary school. At this stage, the instruments used are observation sheets and interviews of 5 teachers who have taught over 5 years and 5 parents related to complaints against the assessment in school. 2). the planning stage consists of several stages of assessing curriculum assessment, designing the assessment display in the form of electronic judgment shown in figure 2. 3). Product development stage: this stage is done by developing the initial look into the application that entered the android operating system followed by the entry of students' learning outcomes into the application 4).

The validators consists of a graphic and application expert who is a lecturer of Information System in Universitas Kanjuruhan Malang, content expert who is a lecturer in PGSD, linguistic expert who is a lecturer in PGSD, fourth grade teacher in SDN Wandanpuro 2 Bululawang and the representative users who are five teachers of grade IV students of SDN Wandanpuro 2 Bululawang, as well as limited trials to 5 parents of grade IV. In product revision stage, the product improvement is done in accordance with the suggestion from the validators.

The data collected are in the form of quantitative data and qualitative data. Quantitative data derived from the questionnaire scores obtained from the questionnaire validators, namely the teacher and parents of IV students. Qualitative data derived from suggestions of the validators, namely the teacher, and interview results from 5 parents of grade IV students and it was presented. Product ratings are being developed at the android product application validation level.



Adaptation : [22]

**Figure 2.** Stages of application design.

### 3. Result and discussion

The result of this development research is in the form of monitoring application of students' learning result based on android mobile. This application can be used on android smartphone that is accessed online by downloading on Google Playstore service which can facilitate the parents in monitoring student learning result at school wherever and whenever through android smartphone. This application can be updated on a weekly basis by the teacher on students' achievement outcomes at school.

The product that has been developed contains the achievement of the students' learning achievement which includes the spiritual value (K1), the social value (K2), the knowledge value (K3) which consist of daily test score, evaluation score, midterm and final semester test scores, and skill (K4) consisting of the scores of practices, projects and products. Assessments are presented in descriptive form for KI and

KI 2 that are supplemented with student data for KI3 and KI 4 using numerical values. Each aspect of the assessment is presented in the form of application choice. The following is shown in figure 1 and figure 2 the android-based monitoring application of student learning result.

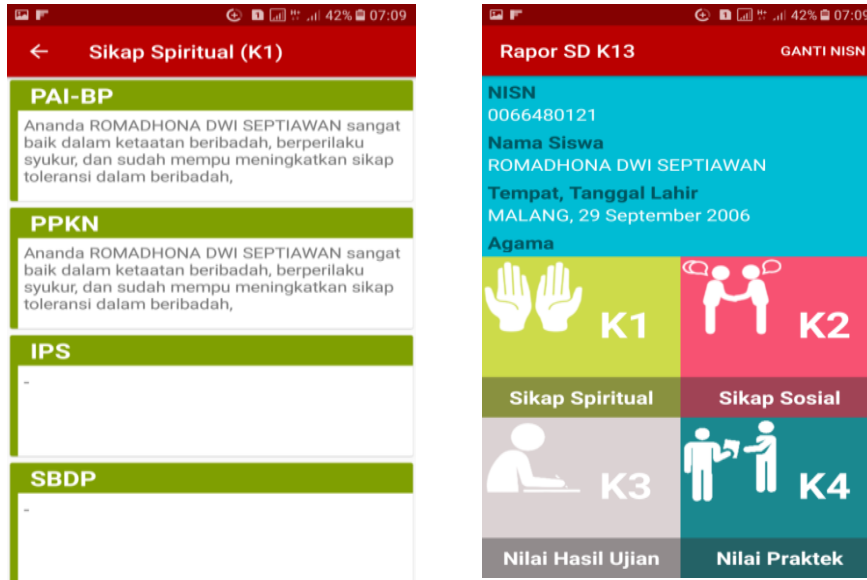


Figure 3. Initial view and KI 1 display.



Figure 4. Display rating of KI 2 and KI 3.

Can be described in figure 2 is a preliminary view for entry to a system containing information on student's parent's number, student name, place and date of birth, religion and choice of application of KI1, KI2, KI3 and KI4. To the left of the initial display is the view for spiritual attitude (KI-1) on each subject which contains a description of the development of the students' spiritual attitudes on all presented subjects.

Figure 3 shows the assessment of aspects of social attitude assessment (KI-2) and knowledge (KI-3) on all subjects. In figure 3 exemplified the subjects of Islamic Religious Education, Civic Education, Social Sciences and also art.

Validation test results are shown in table 1:

**Table 1.** Validation results of experts.

Expert	Result	Criteria
Application	83 %	Very Valid
Content	93,75 %	Very Valid
Linguistics	87,5%	Very Valid
Grade IV Teacher	76,04%	Very Valid

Source: [16]

Based on table 2, it can be concluded that the application of mobile android based learning results obtained assessment of the validators and teacher of grade IV has met the very valid criteria. Furthermore the product of further development is tested to five parents. The results of field trials of the five parents, stated that the application that has been developed is easy to use and access anywhere and anytime.

The development of monitoring application of student learning result based on android mobile is expected to help schools to inform students' learning outcomes to parents and make it easier for parents to monitor their children's learning outcomes in school as well as innovation of school information system. Mobile technology can make communication and exchange of data faster and easier and can be done anywhere and anytime [24], information technology can facilitate the process of learning and educational administration [25], ICT supports teaching and learning [26].

#### 4. Conclusion

The android-based monitoring application earns very valid values from validators and can be accessed anywhere and anytime by parents, therefore making it easier for parents who are busy with their work in monitoring their children's learning outcomes. So it can be stated that the development of information technology can help in improving the results and the process of education. It is expected that the results of this study can be utilized by teachers on a wider scale to facilitate and assist the process of monitoring the learning outcomes for stakeholders involved.

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