

# The Development of Teaching Materials Based on Mobile Learning in English Learning for Elementary Schools

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## ABSTRACT

This research is motivated by the low learning outcomes of elementary school students in learning English. This research aims to develop Android-based mobile learning teaching materials to support English language learning in elementary schools and improve student learning outcomes. This study uses Research and Development (R&D) research using the Borg and Gall model, with the research sample being 5th-grade students of public elementary schools in West Java Province. Product validation tests were obtained from material, language, practitioners, and design experts and practitioners. Furthermore, the practicality test was obtained from the teacher and student response questionnaires throughout the learning process. Meanwhile, the effectiveness test was obtained through a limited trial using an experimental pretest-posttest control group design. The output of this research is to produce an application program for Android-based mobile learning for teaching materials. Based on the study results, it can be concluded that Android-based mobile learning teaching materials are valid, practical, and effective for learning in elementary schools.

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## 1. INTRODUCTION

Teacher creativity in developing teaching materials now becomes attention among academics and practitioner education caused by low competence in teachers. The lack of teachers in creating learning tools has an impact on the creation of learning that is not meant so that it results in student learning motivation which leads to low student achievement. This is exacerbated by teachers who are not creative, innovative, and varied and do not provide a broad learning experience that impacts cognitive, affective, and psychomotor aspects.

The low creativity of teachers in developing learning tools resulted in many problems. Amma (2018) states that teachers' creativity is less varied in using learning tools, so students have difficulty reading and memorizing. Furthermore Nuryani, Haryanto, and Atmojo (2020) stated that a

monotonous and less creative methodology or one that only made speeches and was passive resulted in students being uncommunicative and passive in discussions and making students less confident in their competence. Furthermore, Febriyanti and Mustadi (2020) state that teaching materials already available in schools have many limitations in terms of the depth of material. This shows that if teachers only rely on these teaching materials, it is inevitable that students will not gain comprehensive knowledge. The research from Anam (2020) conducted on prospective teachers' shows that even teacher candidates are not adequate on the indicators tested, namely: planning experiments, hypothesizing, communicating, and concluding.

Based on the problems above, teachers should have high creativity in developing learning tools as the front line in educating the nation's life. One of the learning tools that the teacher should continually develop is teaching materials. In today's digital era, it should be used as an opportunity for teachers to be able to create teaching materials that are packaged digitally. Let's look at the widespread use of technology, such as smartphones, among elementary school-age children. It is massive, supported by user data active Smartphones from 47 million souls Indonesian population, 79% of them from category children until teenagers. However, children's extensive use of smartphones in Indonesia leaves several problems. In this age category, children to teenagers are vulnerable to the impact of easy access to harmful content from smartphones, such as pornographic content, which hurts the self-development of children and adolescents. This is supported by data from Google Trends showing several data related to internet users in Indonesia. The number of searches for adult content using a ubiquitous search keyword is 'sex.' The following negative impact is that it affects psychological development, more specifically emotional development, which causes children to be irritable, rebellious, and sometimes imitate the behaviour contained in smartphones and often talk to themselves. At the same time, the moral aspect impacts discipline, lazy activities, and reduced time. The study even to the point of abandoning their obligation to worship.

Based on the problems above, the problem is excessive smartphone use among children used to play games and social media. Suppose the use of a Smartphone is done the extreme result in addiction and will result in children who feel worried if too long no use *Smartphone*. Then more than that, excessive dependence on smartphone functions can lead to feelings of stress to symptoms of addiction or, in Latin, means 'enslaved'. The above phenomenon is further strengthened by several research results, including that students who use smartphones with intensity are more dominant in playing games. Social media will disrupt learning activities and even decrease students' concentration power (Muflih, Hamzah, & Purniawan, 2017; Sobon, Mangundap, & Walewangko, 2019).

Game electronics on the computer can attract and hypnotize heart children, like play stations, online games, and other games from gadgets, even sometimes child no care environment surrounding because too enjoy *games*. To overcome this, it would be better if smartphones were used in learning so students could learn independently. In realizing holistic education, the main component is teacher performance in preparing, implementing, and evaluating the learning process. One of the keys to success in learning is when teachers can provide varied learning experiences. This must be directly proportional to using assorted learning tools to offer various occasions. One of the teacher's tasks is to have the ability to plan learning activities using varied approaches, models, methods, or learning strategies, according to student conditions and to be able to inspire all students to be actively and productively involved (Fini, Awadallah, Parast, & Abu-Lebdeh, 2018; Hediandah & Surjono, 2019; Lin & Wu, 2016). Teachers, as parties directly involved in the learning process in the classroom, have a very vital role in improving the quality of their students (Amtu, Makulua, Matital, & Pattiruhu, 2020; Makhrus, Harjono, Syukur, Bahri, & Muntari, 2019; McMillan, Johnson, Parker, Hunt, & Boyd, 2020). The ability to create and innovate is an important aspect to be developed in 21st century competencies (Trilling & Fadel, 2009). Teachers should be attentive and creative in carrying out appropriate learning processes that can improve students' creative abilities (Astutik & Susantini, 2020; Grégoire, 2016).

Efforts to give service-learning maximum should always be cheered up. With the developing technology that has been getting into the dimension of education, participants educated sued for could

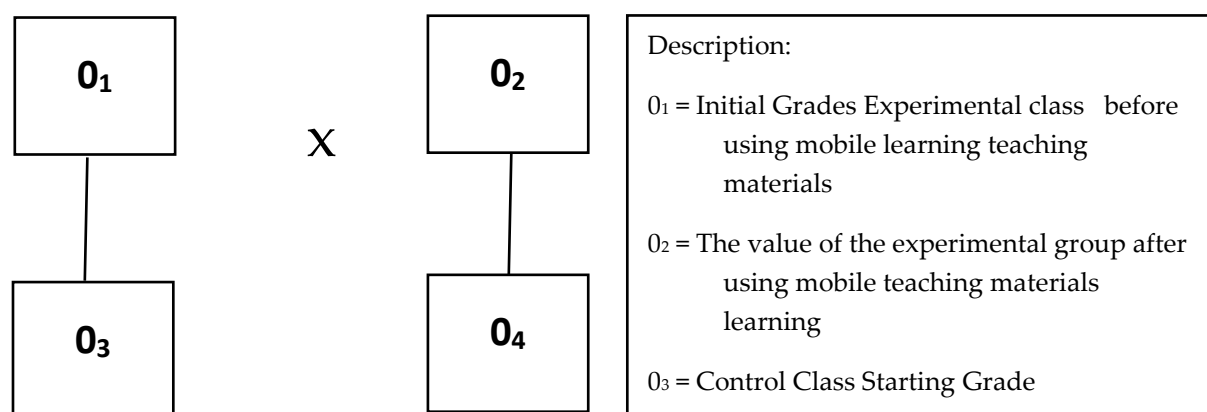
adapt to patterns and characteristics of technology (Demir & Akpınar, 2018). One of them is using mobile learning teaching materials android based, which has the ability to access source studies like source power, tools, and materials learning. Using technology that could make it easy for participants to study when only and where they are not limited by space and time, *mobile learning* has characteristics that have tall score flexibility and can give participants convenience. In addition, the role of students who can access the sources of information they need at any time, question the integrity of the information they achieve, produce, and share in collaboration, learn at their own pace and evaluate their learning.

The previous study has conducted related searches with development seen mobile learning relevant enough for finding research that has not been touched by the previous researcher. One of them is research by Senduk, Alicia AE Sinsuw, and Karouw (2016), who developed mobile learning media augmented reality based on child age early. This study produces a development making a content character with 3D animation models. Mufid and Tiningsih (2014) explore mobile learning using cell phones through story media on students. This produces output in the form of a planning program mobile learning story model that can be applied on cell phones. According to Triani and Sunarsih (2019) developing mobile learning technology to resolve students' difficulty in analyzing process, the method used is study and development (R&D) with ADDIE design. In analysis, this produce ingredient teaches prose fiction based on integrated mobile learning culture sleepy on study program student Education Language and literature is valid, practical and effective applied in process learning. Lestari, Sugiarso, and Sompie (2019) conducted a study to make a design application for mobile learning, reading prayer daily and praying morning and evening android based. Based on research that has been done Application Mobile Learning, Reading Prayer Daily and Pray Morning & Evening Based on Android has to succeed designed use method Multimedia Development Life Cycle consisting of stages: concept, design, collecting material, assembly, testing, and distribution. Multazam and Gunawan (2018) developed mobile application-based mobile on ideas learning collaborative. The results from the study conclude that collaborative-based mobile learning gives various profits like context study standalone, portability, connectivity, and social interaction. Hardiansyah, Rusmono, and Winarsih (2018) did a survey to develop based teaching materials targeted to mobile learning to provide based teaching materials; current technology has become a favourite for students. It is not yet many available on a school base. The resulting conclusion in a study is teaching materials made with the use of application non-coding so that easily made, so the developer and the teacher can make the alone application the learning they want to stack.

This is why the researcher in Majalengka Regency has been using this method to develop Android-based mobile learning teaching materials for use in English classes at the primary school level. This study will shed light on numerous topics regarding how students' English language skills could develop as a result of employing technology in the classroom.

## 2. METHODS

The methodology design used in this study is based on the Research and Development (R&D) process, which employs the Borg & Gall design. More specifically, in the field of education, research and development (R&D) is a process that is used to improve and validate educational products, as well as to discover new knowledge through "base research". Borg & Gall (Sugiyono, 2013) describes a series or steps that must be taken in this approach, namely: (1) potential and problems; (2) collection of information; (3) product design; (4) design validation; (5) design improvements; (6) product trial; (7) product revision; (8) trial use; (9) product revision; and (10) mass product manufacture. On trial limited, design research used is a pretest-posttest control group design shown in the picture as follows:



**Figure 1.** Research Design

This research was carried out in schools based in the region of Regency Majalengka. The research subjects for the qualitative study were grade 5 public elementary school students. Areas selected purposively include Central, West, East, South, and North. The data in this study were collected using several data collection techniques, namely (1) interviews, (2) questionnaires, (3) testing, (4) observation, and (5) documentation. The instruments used to collect research data are (1) semi-structured questionnaires to collect needs study data (2) semi-structured interview guidelines to collect student and teacher response data about Android-based Mobile Learning. (3) test for Android-based Mobile Learning, (4) assessment of the Android-based Mobile Learning process, (5) field notes to collect data on the results of observation activities, (6) guide to the assessment of the learning process, and (7) documentation to collect data research implementation process.

### 3. FINDINGS AND DISCUSSION

The preliminary study phase begins with conducting research and collecting data to discover the problems in the field. Data was collected through FGD (Focus Group Discussion) with teachers in elementary schools in grade 5.

The planning stage begins with the preparation of the teaching materials drafting team. Then the drafting team determines the design of the printed version of the teaching materials, which includes physical design, text design, and content components. After the structure is selected, a mapping of the learning materials is carried out. Material mapping begins with an analysis of core competencies, essential competencies, learning indicators, and learning objectives, then continues with determining themes based on the 2013 version of the 2017 curriculum. At this planning stage, it is also planned to evaluate teaching materials by material experts, linguists, design experts, and educators by making a teaching materials assessment grid.

The product development stage begins with the material collection, material management, and, finally, printing. The materials collected are in the form of physical designs, text designs, and content components to complement the planned teaching materials. After the materials are collected, the materials management team is carried out by the drafting team, namely by selecting the materials that have been collected and editing them. The development results that have been made involve several subjects, namely the Indonesian language, science, social studies, PPKn, and SBdP.

The development of teaching materials utilizing technology becomes an opportunity for teachers in operating command as educators in the digital age. Technology in form of Application could help the teacher prepare device learning by providing creative, exciting, and fun content. The important thing is that using technology could help students understand draft learning better (Georgina & Hosford, 2009). Today's use of Android-based smartphones is proficient for many played children of elementary school so it could become an effective learning media. Application can also help parents for

her children permanently study following the style life millennials utilizing technology. Specifically, the content contained in the Application of this teaching material is so that students can learn whenever and wherever following needs and can collaborate, integrate, and contextualize Among study with life (de Clunie, Clifton, Castillo, Rangel., 2013).

This application is also designed with nuanced dishes local wisdom. Touch local knowledge provides different touch shades so that they are more interactive and contribute to increasing results study students (Wijyanthi, Lasmawan, & Natajaya, 2014; Damayanti, Dewi, & Akhlis, 2013). Local insight served in content, like the story of the characters with picture use fashion custom Sundanese, Javanese and Balinese. Besides it's also in one part opener given content picture with nuance of natural countryside and describes kids who play the traditional game.

Innovative technology allows teachers to do many things, significantly increasing motivation to study until achieving maximum learning (Liliarti, N, & Kuswanto, H., 2018). Through the application technology based on Android, teachers can invite students to increase their ability to speak wherever and whenever students are. From every learning presented, this mobile learning application contains loads that ask students to read, write, listen, and speak with a notice draft based on Skills. This is designed to make it easy for students to improve their language skills, covering reading, writing, listening, and speaking elements.

Application of teaching material is also compiled based on curriculum 2013 version 2017 with pack content by thematic. Presented content based on the themes contained in the 2013 version of the 2017 curriculum, available in 9 pieces. The initial design of the teaching materials developed is as follows:

#### 1. Cover/ Front Page



**Figure 2.** Initial Display of Mobile Learning Teaching Materials

The cover of the teaching materials, and illustrations of traditional games from several regions in Indonesia are used. This picture contains the meaning of the world of children with various types of games carried out by children at that time. In addition, there are pictures of the surrounding shady environment, and the cover also conveys that we are comfortable with a dark and clean environment. While the colour selection on the cover displays a combination of blue and light green, looks pristine and peaceful, this message is that it is time to keep the environment clean in today's modern era.

#### 2. List of contents



**Figure 3.** Design of Contents for Mobile Learning Teaching Materials

The table of contents made its readers more leisurely look for the contents of the material in the mobile learning teaching materials by seeing pages listed in the table of contents. This thing describes the outline organization of exclusive contents of teaching materials.

### 3. Product Description

The learning description consists of themes 1-9, which include attitudes, skills, and knowledge that are developed based on Core Competencies (KI) and Basic Competencies (KD) and includes linguistic aspects, namely reading, writing, listening, and speaking. The description of the material in this teaching material is adapted to the 2013 version of the 2017 curriculum, and the report is as follows:

#### a. Writing Learning

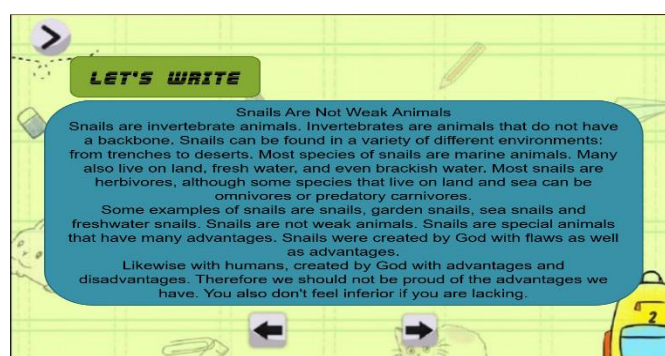


Figure 4. Writing Learning Design

Write that student is requested to put forward his opinion based on text readings that have been read before, stages the stretched from Step idea acquisition, processing, idea to idea production.

#### b. Learning to Read



Figure 5. Reading Learning Design

Aspect Learning second is to develop the ability to read students. In part, this student is not only directed to dominate content material. However, this is also a student-directed development of reading knowledge or skills. In part, the development ability to read this destination is (1) possible for students to be able to enjoy activity reading, (2) able to read in heart with speed flexible reading, (3) and get a level enough understanding of the contents reading.

## c. Listening Learning



Figure 6. Listening Learning Design

The third aspect of language learning is listening. Essentially, at least three important objectives of listening learning in schools are developed in this Application of mobile learning teaching materials. The three objectives are to (1) train students' concentration power, (2) train students' comprehension power, and (3) train students' creative power. These three goals are hierarchical to achieve the goal of creative training power, and listening learning must also be carried out to train students' concentration and understanding power.

## d. Speaking Learning

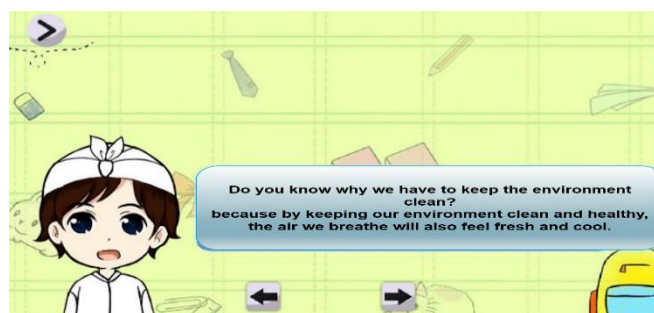


Figure 7. Speaking Learning Design

The learning aspect developed in the Application of this mobile learning teaching material is students' ability or speaking skills. Essentially, there are at least four essential goals of learning to speak in schools as outlined in this Application. The four objectives are (1) to form students' sensitivity to the source of ideas, (2) to build students' ability to generate ideas, (3) to practice speaking skills for various purposes, and (4) to foster students' speaking creativity.

## e. Learning Evaluation 1

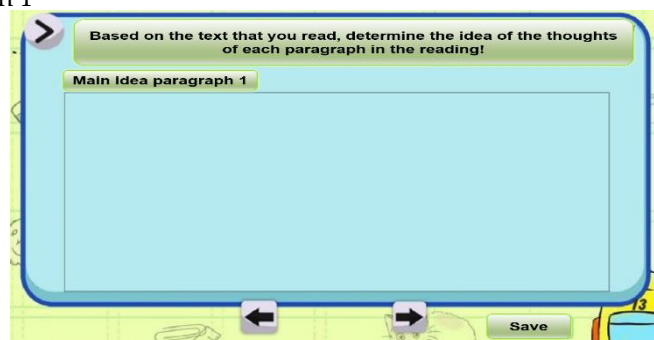


Figure 8. Learning Evaluation Design

In part, this is form evaluation learning developed writing in this mobile learning teaching material. Based on picture 5 above, describe what the student requested for determining ideas

regarding ingredient readings that have been read in the section before. Students were asked to determine ideas from each paragraph with the goal of students capable of creatively writing down ideas based on ingredient reading with language alone. In the example evaluation from learning in writing. This is also a goal to expand skills of writing students to always be critical and creative, put forward their opinion independently, and train ability to think crucial, innovative, and metacognitive.

#### f. Learning Evaluation 2

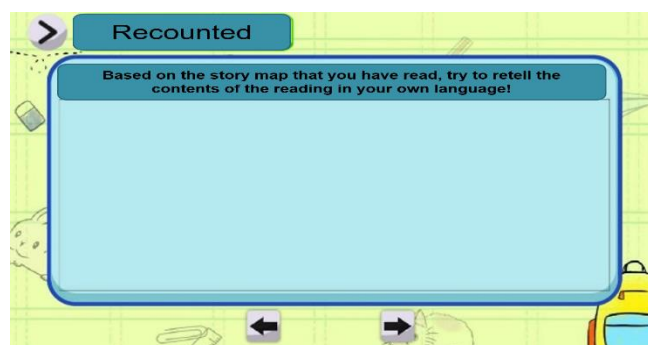


Figure 9. Learning Evaluation Design 2

Authentic assessment allows direct measurement of the learner's performance to indicate the achievement of the competencies being taught. In essence, evaluation is the final learning process report, especially on student progress and achievement. Therefore, it can be said that evaluation is the teacher's responsibility in implementing the learning process. The assessment of reading aspects displayed in this mobile learning teaching material application has collaborated through students' creativity through writing skills. In the evaluation section of reading learning contained in the Application of this teaching material according to Figures 5 and 6 using authentic assessment.

The validity of Android-Based Mobile Learning Teaching Materials is carried out by being assessed by the validator. Validators assessing Android-Based Mobile Learning Teaching Materials are material experts, linguistic experts, field practitioners (teachers), and multimedia experts. Android-Based Mobile Learning Teaching Materials are said to be valid if they are considered good by experts/validators and meet the following criteria: (a) content accuracy; (b) learning materials; (c) conformity with learning objectives; (d) physical design and others (Solikhin & Murni, 2017). Mobile Learning-Based Teaching Materials are said to be valid if the score intervals on all the average scores given by the experts/validators are in the "very good" or "good" category. The validator in assessing by providing an assessment on the instrument validation sheet. The instrument consists of instructions for filling out, scoring, and scoring rubrics. The validated Mobile Learning-Based Teaching Materials include five aspects of assessment. Aspects of the assessment of Mobile Learning Based Teaching Materials include flexibility in using media, ease of installation, smooth operation, consistency of navigation, text readability, alignment of text and backgrounds, quality of illustrations, sound effects, and interactivity. The table below presents a summary of the results of the validator evaluation.

Table 1. Recapitulation of Expert Validation Test Results

No	Subject	Result
1	Material Expert	70.52
2	Multimedia Expert	85.78
3	Linguistic Expert	79.66
4	Elementary School Teacher	73.25
Total Score		309.21
Average		77.33

It can be seen that the results of the recapitulation of the product feasibility level reached 77.33%. The average indicates, "This product is within the valid criteria and can be used in learning activities". Validity is seen by the suitability of Android-based mobile learning teaching materials based on criteria on aspects of the material, multimedia, linguistics and aspects of elementary school teaching.

The practicality of Android-based mobile learning teaching materials can be seen from the indicators: teacher and student response questionnaires. More details can be described as follows:

a. Teacher's Response

The following is the result of the recapitulation of the teacher's response questionnaire to the android-based mobile learning materials, which can be seen in Table 2.

**Table 2.** Recapitulation of Teacher Response Questionnaires

No	Respondents	Average
1	12	3,57

Source: data processed by researchers

The teacher response data of as many as 12 respondents, shown in Table 2 obtained an average score of 3.57. The average result with a score of 3.57 when referring to the assessment criteria table is "very good". This means that teaching materials on Android-based mobile learning teaching materials received a positive response from teachers as field practitioners.

b. Student's Respond

The results of the recapitulation of student questionnaires are presented in the following table.

**Table 3** Recapitulation of Student Response Questionnaires

Student	Score	Student	Score	Student	Score
1	3,53	11	3,27	21	3,40
2	3,27	12	3,20	22	3,20
3	3,72	13	3,00	23	3,20
4	3,07	14	3,20	24	3,33
5	3,20	15	3,47	25	3,33
6	3,40	16	3,40	26	3,40
7	3,13	17	3,33	27	3,40
8	3,40	18	3,20	28	3,27
9	3,27	19	3,20	28	3,33
10	3,20	20	3,07	30	3,20

Source: data processed by researchers

Data recapitulation serves that response data students as many as 30 respondents get a scoring average of 3.57. The Average Score, if linked to the table response rating the student is in the category of "very good". This shows that Android-based mobile learning teaching materials get a positive response from a student in learning.

For knowing enhancement ability language English student control class is done through test ability Language English as much twice, that is test initial (*pretest*) language English student before use ingredient teach ordinary/book print and test final (*posttest*) language English student after use standard teaching materials/books print. Whereas on class experiment conducted test initial (*pretest*) language English students before use ingredient teaches mobile learning based on android and test final (*posttest*) language English student after the use Android-based mobile learning teaching materials. Analysis conducted with use formula *Normalized Gain*. The results of test N-Gain enhancement ability Language English students could be seen in Table 4 as follows.

**Table 4.** N-Gain. Test Results

Class	Ability		Score	
	Learning Outcomes	Average	N-Gain	Criteria
Control	Pretest	59	0.66	Medium
	Posttest	62		
Experiment	Pretest	57	0.96	High
	Posttest	80		

Source: research processed by researchers

Based on the calculation of the results with the N-Gain formula is obtained 0.66 for class control and 0.96 for the class experiment. If linked following criteria acquisition, *Normalized Gain* could explain that enhancement ability Language English student class control that uses print teaching materials ordinary with criteria "medium" while enhancement ability Language English student class experiment uses Android-based mobile learning teaching materials with "high" standards.

Efforts in giving service learning maximum should always be in a surge. With the developing technology that has been possessed on dimensions education, the previous participant educates sued for adaptive with pattern and characteristics technology. The only one with learning using mobile learning could be the ability to access source studies like source power, tools, and theory learning. Use technology that can make it easy to educate participants to study when just and where they are not limited by room and time. Learning with mobile learning have characteristics that have tall score flexibility and can give convenience for participant education. Besides, the role of students who can access the sources of information they need at any time, question the integrity of the information they achieve, produce, and share in collaboration, learn at their own pace and evaluate their learning. (Yıldız et al., 2020) .

Mobile learning is explained as education using devices without cables, such as handphones, personal digital assistants (PDAs), or laptops. Mobile Learning is a part of learning electronic or e-learning (Georgiev, Georgiev & Smrikarov 2006). Mobile learning is a choice where service learning must be conducted where and anytime. Classification M-Learning is based on: (1) Type of device used; (2) Using wireless technology; (3) Type of information that can be accessed; (4) Type access (online/offline). (5) Location; (6) Type communication; and (7) Support for standard Mobile Learning. According to Chabra and Figueiredo (2002), mobile learning is learning with a device that can be used every moment and in every place. This is in line with FutureLab (2005), which states that mobile learning can increase the possibility of informal learning that is not bound to location.

Wilson and Bolliger (2013) mobile learning, on principle, aim to make it easy for learners to study where just, and then just following the time in have. Because virtual mobile *learning* can be accessed only from there, providing access to whole materials for further education, Mobile Learning provides share content for every user with the same content and allows existing bait to come back instantly. Presence of mobile learning capable support draft education along life, the nature from based mobile learning open source created every person could develop and use it following desire and needs learning. In general, E-learning and car learning have features that are searched according to the desired user, so various types can quickly search for and find. Based on the opinion, one-factor important influencing displacement draft from source study print to electronic format in form e-learning and mobile learning from side convenience its accessibility. Android is a system operation mobile-based Linux developed by Android Inc and then acquired by Google. According to Purwantoro, Rahmawati, and Tharmizi (2013), Android is something software (device software) used on a mobile device (device running) which includes the operating system, middleware, and software application core. Satyaputra (2014) Android is a system operation for Smartphone's and tablets. Huda (2013) argues that android is a system operation based on Linux special for devices such as smartphones or tablets. According to Nasution and Padli (2013) advantages of android that is to do a comprehensive approach, open source,

free platform, and system operation populist whereas the weakness of android is always connected to the internet, has many displayed advertisements, and no economical power battery. By because that development learning must designed and supported by teaching materials so that could increase understanding student to learning.

#### 4. CONCLUSION

This research showed that the development of an application program for Android-based mobile learning teaching materials is valid, practical, and effective for learning in elementary schools. Thus, this application was suitable for learning activities on the material. The results also provide further support for approaches to English language teacher education that attempt to integrate technology in teaching at elementary school rather than introduce them separately and highlight how emerging and established technologies can be employed to provide opportunities for communication that are known to make students easier in learning to convey their research to society or scholar.

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