Analysis of Types of Technology Use as a Supporting Tool for Sociology Learning by High School Students

Fathan Syuhada Kurniawan[1*], Sariyatun[2], Herry Widyastono[3] [ID]

[1,2,3] Department of Educational Technology, Sebelas Maret University, Surakarta, Indonesia

A B S T R A K

Penemuan yang ada saat ini harus mengacu pada empat atribut pembelajaran abad ke-21, yaitu penalaran yang spesifik dan pemikiran kritis, imajinasi dan kemajuan, usaha bersama, dan korespondensi. Pembelajaran abad ke-21 membutuhkan penemuan yang terbuka dan serbaguna untuk pergantian peristiwa mekanis saat ini. Oleh karena itu, riset ini memiliki tujuan untuk melakukan analisis jenis teknologi yang digunakan oleh guru untuk menunjang proses pembelajaran sosiologi. Pada penelitian ini metode yang digunakan adalah metode kualitatif deskriptif. Teknik pengumpulan data yang digunakan adalah survey dan wawancara yang mengacu pada angket serta pedoman wawancara sebagai instrument penelitian. Subjek riset ini terdiri atas 145 siswa sekolah menengah atas. Adapun data yang diperoleh selanjutnya akan dianalisis secara interaktif dengan 4 tahap. Hasil riset menunjukkan 95% siswa teridentifikasi telah emmiliki smartphone, hal ini juga didukung dengan peraturan di sekolah yang mengizinkan penggunaan smartphone untuk aktivitas pembelajaran. Hanya saja peluang ini memiliki tantangan dimana siswa masih cenderung memanfaatkan smartphone untuk bermain game (48% respon siswa). Melihat peluang dan tantangan ini, terlihat jika smartphone menjadi salah satu jenis teknologi yang bisa dioptimalkan untuk aktivitas pembelajaran sosiologi, baik secara mandiri maupun berkelompok. Dengan demikian siswa bisa mengalihkan penggunaan smartphone sebagai sarana bermain, menjadi alat untuk menunjang pembelajaran yang difasilitasi oleh guru.

A B S T R A C T

Today's findings must refer to the four attributes of 21st-century learning: specific reasoning and critical thinking, imagination, progress, joint effort, and correspondence. 21st-century learning requires discoveries that are open and versatile to today's changing mechanical events. Therefore, this research aims to analyze the types of technology used by teachers to support the sociology learning process. In this study, the method used is the descriptive qualitative method. Data collection techniques used were surveys and interviews referring to questionnaires and interview guidelines as research instruments. The research subjects consisted of 145 high school students. The data obtained will then be analyzed interactively with 4 stages. The research results show that 95% of students are identified as having a smartphone. It is also supported by regulations at school that allow the use of smartphones for learning activities. It is just that this opportunity has challenges where students still tend to use smartphones to play games (48% of student respond). Seeing these opportunities and challenges, smartphones are a type of technology that can be optimized for sociology learning activities independently and in groups. Thus students can divert the use of smartphones as a means of playing, becoming a tool to support learning facilitated by the teacher.

1. INTRODUCTION

The presence of the 21st century is inseparable from the period of modern transformation 4.0 which in the 21st century makes a hundred years receptive or 100 years of globalization. Currently Indonesia is entering and, surprisingly, carrying out a period of modern unrest 4.0 which is accepted to open open positions as well as wider and more diverse open positions and make human work faster, simpler and with satisfactory results (Nithyanantham et al., 2019; Tyan et al., 2020). Furthermore, the 21st century is also referred to as the modern age "modern age" and furthermore the information age "information age" for this state any attempt to gain ability through self-acclimatization and subsequently meet the needs of life in different ways depending on information (Malik, 2018a; Sa'pang & Purbojo, 2020; Shatri, 2020). The 21st century learning paradigm implies that an educator must use digital technology, communication facilities and/or the right network to access, manage, integrate, evaluate, and create information to function in learning (Sze Yean, 2019; Trevallion & Nischang, 2021). The rapid development of education has also had an impact on the ability to increase human resources,

especially in the industrial era 4.0. Competency standards in 21st century learning must be owned by every learner in the world of work which is international, multicultural and interconnected between one competency and other competencies (Ally, 2019; Kowang et al., 2020).

Education has an important role for life, without education it will be difficult to realize the process of change and application of knowledge (Edwards-Groves et al., 2018; Malik, 2018b). Another term for the process of change and application of knowledge is the learning process which is a step or process in obtaining motivation in terms of knowledge, skills, habits, and behavior (Ambarita, 2021; Opidianto et al., 2021). Various efforts as renewal have been made so that education is of high quality, using various learning methods to using more varied learning media by combining audio and visual (S. Amin et al., 2020; Nafi'ah et al., 2019). In addition, as an innovation in the implementation of education the implementation of the 2013 curriculum emphasizes the development of character and culture in the students who were taught from the beginning (Hanum & Annas, 2019; Setiawan et al., 2020). However, its implementation still provides results that are not ideal, especially low Digital Literacy, because teachers do not use innovation, and reasoning is still relatively low. In fact, these variables can support the implementation of the 2013 curriculum.

It's just that the application in the field is sometimes still not as expected, as is the fact in the field obtained through observation activities at Muhammadiyah Klaten High School, sociology learning still does not use media to stimulate students to think critically. Students do not understand the main problems that exist in learning, and it is difficult to express arguments and facts in the problem. In addition, the sociology teacher's statement revealed that teachers and schools should increase the number of sources or interactive media learning tools to explain social conflict material, because students are faced with problems only with theory without conducting in-depth analysis of a real case in everyday life.

The current learning process should be able to see various opportunities for using digital technology, besides that students also seem very familiar with using technology, both smartphones and computers (Chiappe-Laverde & Paz-Balanta, 2021; Raji, 2019; Suryanda et al., 2019). Holistically, schools need to help prepare students to become critical thinkers, insightful and resilient learners, creative problem solvers, and active members of their communities (Arsić & Milovanović, 2016; Mansor et al., 2021). Various skills and abilities in utilizing technology optimally are considered important to face the digital era which requires people to think critically in filtering the dissemination of information (Syahputra & Maksum, 2020; Syahril et al., 2020).

Teaching materials are materials, information, tools/media used by lecturers to carry out learning, including creating an atmosphere that encourages students to learn (Chairudin & Dewi, 2021; Widarti et al., 2020). Lack of quality teaching materials will automatically affect the effectiveness and success in learning (Şimşek & Yazıcı, 2021). Therefore, educators need teaching materials that are flexible, complete, and contain simple material and are in accordance with the technological era, one of the teaching materials that can meet these expectations is digital teaching materials that can be operated via smartphones (Herwinarso et al., 2020; Wati, 2019). The existence of new discoveries and innovations in electronic devices, be it hardware or software, is one proof of the current developments in science and technology (Ratheeswari, 2018), so that the existence of technology can facilitate the performance and absorption of knowledge from students (Shoraevna et al., 2021; Udu et al., 2021). Digital teaching materials in other terms are also said to be a product of digital-based non-printing teaching materials that can display text, images, animations, and videos through electronic devices such as computers, laptops or smartphones (Liu et al., 2021; Perdana et al., 2021; Riyanto et al., 2020). Digital teaching materials are also learning resources that contain material, methods, limitations and evaluation methods that are systematic and interesting for students designed to achieve competencies that are in accordance with the curriculum and can be learned by students through technological devices such as smartphones (Drigas et al., 2020; Kuswanto et al., 2021). According to various studies, it has been proven that the use of smartphones as an intermediary in learning digital materials is proven to be able to increase student achievement (D. P. E. Putri, 2019; Wibawa et al., 2019), keterampilan literasi siswa (Hadiyanti et al., 2021; Sá et al., 2021), students' critical thinking skills (Hasyim et al., 2020; Muhibbin et al., 2021), even contribute positively to the affective development and character of students (Chairudin & Dewi, 2021; Filivani & Agung, 2021).

This research was conducted as a complement to previous research on student perceptions of the development of a smartphone-based digital book in science subjects, where the product developed can be operated on smartphone devices and obtain proper assessment from experts and teachers (Perdana et al., 2021). Other research has also succeeded in identifying related digital teaching materials regarding healthy lifestyles, which in terms of feasibility assessments obtain appropriate decisions from validators to then be applied as learning media (Prasetyo et al., 2019). Then other research regarding the perceptions of both teachers and students towards the presence of technological devices such as smartphones to be used in the learning process (Qodr et al., 2021; (Kamil Budiarto et al., 2021; Kondakci et al., 2017; Rashid et al., 2021). The difference between this research and previous similar studies is related to the focus only on identifying the use of smartphone-based technology that has been used by students, whether it has the opportunity to be applied to the learning process or not.

Therefore, this research is very important because through the identification results that will later be found and analyzed, teachers and education practitioners can create a more dynamic, active learning atmosphere and are able to design ICT-based learning processes. Given that through an active and creative learning process it will be able to provide convenience to students in understanding the material, and achieving the competencies needed in the 21st century, including working together to improve reasoning and critical thinking so that learning objectives are achieved. Smartphone-based digital teaching materials are an alternative solution to improve student skills (Nasution et al., 2021; Sari et al., 2020). Thus, mobile technology such as smartphones can be a suitable medium to facilitate learning activities. Given that the subject of sociology is a science that is quite vital in providing knowledge related to the characteristics of a society. Therefore, learning sociology must involve student activity by seeing various opportunities such as smartphones so that learning objectives are achieved and students also acquire 21st century competencies. In particular, this research will aim to obtain information regarding current smartphone use by students in order to measure the opportunity for this use to be used as a solution to the dynamic learning process of sociology subjects in the digital era.

2. METHOD

The use of descriptive qualitative research methods in this study cannot be separated from the research objectives, namely to carry out the process of identifying the types of technology used by students during the sociology learning process (Sugiyono, 2018). The type of qualitative method in this research is descriptive with the research subjects consisting of 145 high school students, randomly selected from high schools in the Klaten area. Meanwhile, for data collection techniques, this study used a non-test technique by distributing questionnaires (Khatri, 2020). The questionnaire was chosen as a tool for collecting data due to research objectives that focus on identifying the types of technology that have been used so far in the learning process. The items developed in this needs analysis totaled 16 questions, it's just that relevant data related to the use of the type of technology used for the learning process is the main issue whose results will be presented in this research. The instrument items developed adopt questions conducted by several relevant research related to the use of technology to support the learning process, namely by Hanif, Qodr, and Budiarto (Budiarto et al., 2021; Hanif et al., 2018; Qodr et al., 2021). The needs analysis instrument items developed showed in Table 1.

Table 1. Needs Analysis Instrument Items

No	Indicator	Amount of Items
1.	Respondent Identity	3
2.	Learning Strategies and Methods	1
3.	Types of Technology Used by Teachers	10
4.	Students' Perceptions of the Development of Smartphone-based Learning Media	2

After the instrument items are developed, the validity of the instrument will first go through a process of assessment and consultation by experts, which is commonly referred to as expert judgment (Widoyoko, 2018; Elangovan & Sundaravel, 2021). Data analysis in this study has 4 stages, 1) data collection, 2) data reduction, 3) data presentation, 4) conclusion drawing, then related to the results of student responses then analyzed using percentage techniques (Bustanil S et al., 2019; Qodr et al., 2021). in order to make it easier to identify student responses related to the questionnaire items distributed to students.

The research procedure starts with the development of a needs analysis instrument, then the instrument is assessed and consulted by an expert to provide input or as an approval for the form of instrument validation. After that, questionnaires were distributed to all research subjects, namely high school students in order to identify the main research focus, namely the type of technology used for the sociology learning process in high schools. After the data is collected, the data is then analyzed by means of interactive analysis and represented by percentages to facilitate the identification of student perceptions regarding the use of technology during the learning process. An illustration of the procedure for carrying out the research showed in Figure 1.
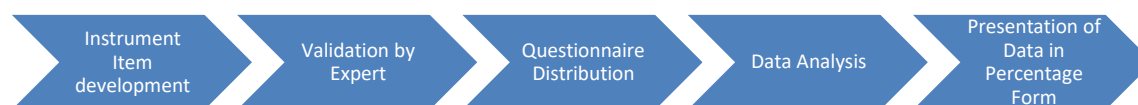
Instrument Item development → Validation by Expert → Questionnaire Distribution → Data Analysis → Presentation of Data in Percentage Form

Figure 1. Research Procedure.

3. RESULT AND DISCUSSION

Result

The results show that there are opportunities that can be utilized by using smartphones to support learning, especially in sociology courses. The following data on the ability to use smartphones of High School students can be seen in figure 2. Based on the figure, it can be seen that 95% have a smartphone and 5% do not have a smartphone that helps students in doing various jobs. This smartphone as a technology that is quite flexible and the use of smartphones has not been carried out optimally by teachers. This is shown by data regarding the use of smartphones in learning. The learning method that is often used is lectures and has not utilized the smarphone to the fullest as shown in figure 3.
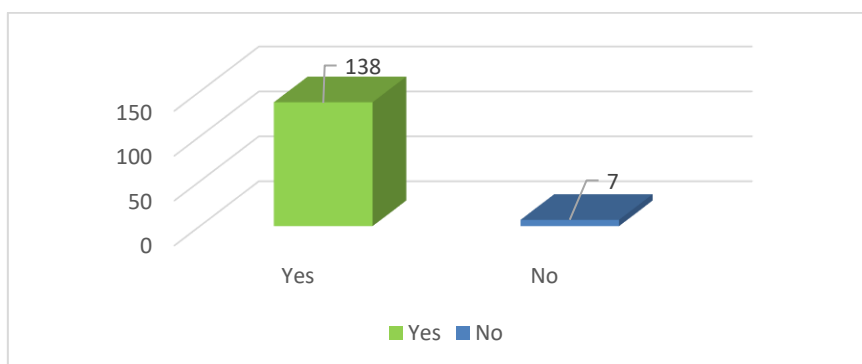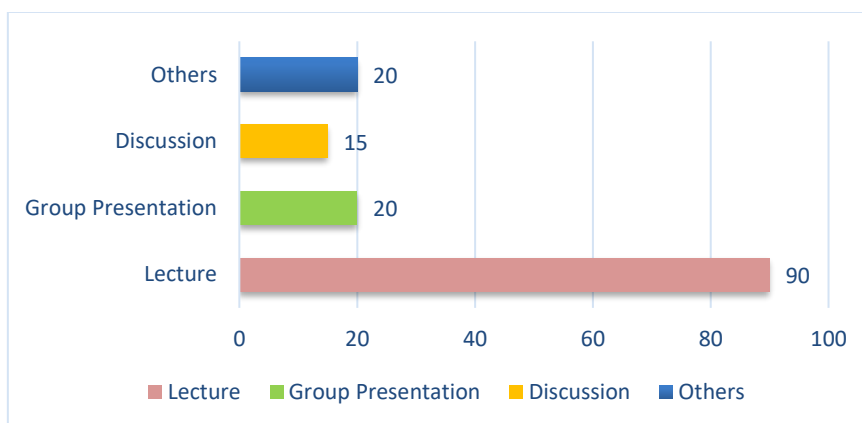

Figure 2. Smartphone Ownership

Figure 3. Learning Methods and Strategy Used by Teacher

From the results of the identification of student responses regarding the learning methods that are often used by the teacher, it can be seen that the teacher is still dominant as a learning resource, considering that the method that the teacher often uses is the lecture method (90%), followed by the percentage of groups which the teacher also sometimes uses as one of the alternative learning methods. And discussion (15%) is an alternative choice of other learning methods that are often used when the learning process takes place. Based on figure 4, there are 74% the student states that the school allows students to use smartphones in the learning process. 11% stated that certain subjects were allowed to use smartphones, and 13% of students stated that other subjects were also not allowed to use smartphones during the learning process. These results certainly have a great opportunity for sociology learning to be able to utilize smartphones. Bearing in mind, this subject is one of several other subjects that allows students to use smartphones to support learning activities in class.

Figure 5 will show the data on the use of smartphones. Student response showed that 42% of students using smartphones to play games, then 48% of students to access social media and there are 10% of students to help in learning. Teachers are less optimizing smartphones for learning. On the other hand, teachers are also unable to provide facilities for technology-based learning activities, especially in the use of smartphones.
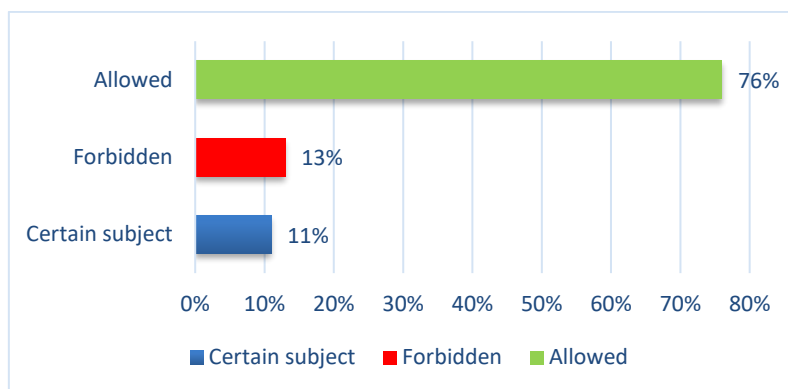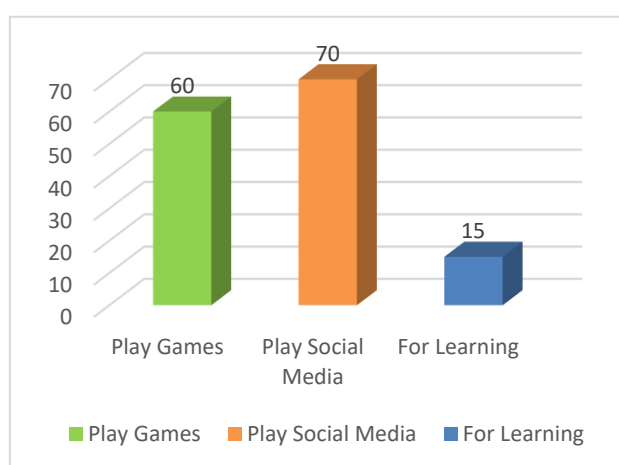
Figure 4. Smartphone Use Policy at School

Figure 5. Smartphone Utilization

Discussion

The digital era as it is today requires teachers to always innovate in managing learning and always update the implementation of the national curriculum so that it is aligned and there can be interrelationships between one component and another. At least, the facts from the field of research have shown that not all teachers are willing to innovate and update on technological developments. It can be seen from the results of the questionnaires distributed to students, where teachers are still found using the lecture learning method. Even though currently innovative learning methods such as discussions, working on a project, problem-based learning are learning methods that seem to be required by the government to be implemented in schools (Aufa et al., 2021; Li & Ren, 2018; Sumarmi et al., 2021). This of course cannot be allowed and a solution must be found. Because the use of innovative learning methods and approaches will provide greater access for students to be able to master various competencies in the 21st century, such as communication skills, literacy, critical thinking, innovation and problem solving (Anagün, 2018; Önür & Kozikoğlu, 2020).

In addition to the components of learning methods and strategies, it should be noted that the use of supporting tools to convey material also continues to change and improve in quality. At present, with the very rapid development of technology, a variety of application options have emerged to facilitate the teacher's task of delivering material in digital format (Muhali, 2019; Shoraevna et al., 2021). One technology that is currently experiencing developments in human life is computers or laptops, internet networks, and smartphones (Lavrenova et al., 2020; Parra, 2021). However, some teachers have not been able to optimize the development of these technologies. This of course can be influenced by several factors, such as the readiness factor of the facilities available at the school itself (Kamil Budiarto et al., 2021; Karunaratne et al., 2018), bearing in mind that without the facilitation support provided by the school, the utilization No matter how high the technology is, it will not be implemented properly. Besides that, another factor that prevents these technologies from being utilized optimally is the human resource factor itself (Chisango et al., 2020; Nikolopoulou et al., 2021). As relevant research has successfully shown that basically teachers need time to be able to accept the integration of ICT into the learning process, considering that they still often encounter several obstacles ranging from facilities to their ability to create and manage material in digital formats (Mahdum et al., 2019).

Today's technology and learning media are practically inseparable, the use of technology is so a natural concern for some individuals, making technology one of the best obtaining media for students to get messages from educators in addition to having the option to work with instructors and students, technology can also further develop the imagination of educators. On the other hand, the results of the study show that most students already have one of the technologies mentioned in the previous paragraph, namely Smartphones. It's just that the use of smartphones that they have so far is still dominated to play video games. In fact, with the ownership of digital technology like what students currently have, they have the opportunity to be utilized in the learning process. considering the function of a smartphone which can currently be a supporting tool for opening digital material (Qodr et al., 2021; Sari et al., 2020). The use of smartphones in the learning process has been able to have a positive impact on increasing student achievement, student learning motivation and even mastery of 21st century competencies (Drigas et al., 2020; Ismail et al., 2018; Mahdi, 2018). This is of course enough to be the basis that digital technology such as smartphones, is quite potential to be applied to the learning process. Several studies have succeeded in showing the positive impact of using smartphones, and have succeeded in showing that smartphones can be applied to the learning process.

As other research, research involving 188 students succeeded in proving that the use of problem-based mobile learning could have an impact on their ability to solve cases through the questions they were working on, besides that students gave positive responses to the use of problem-based mobile learning, they consider that this application is very dynamic and can be applied to the learning process (Amin et al., 2021). In line with that, research revealed the fact that smartphones can be a medium for increasing students' desire to read books, so indirectly if students' interest in reading books is high as a result of smartphones being used as media then this then has implications for increasing student academic achievement (Bukhori et al., 2019). From the relevant research, it shows how important the role of learning media is, and the influence of smartphone-based learning media on the output of the educational process.

Some of this research shows that, of course, the opportunity for smartphones to become a means of support for learning is getting bigger. There is no doubt that overall the use of Android-based smartphones has been proven to have a positive impact on student learning processes and outcomes (Suryanda et al., 2019; Wibawa et al., 2019). In addition, according to the responses obtained from this research, it shows that if students are allowed to access smartphones when learning takes place, of course this can then add considerable opportunities for digital learning media innovation (Hanif et al., 2018; Nikolopoulou et al., 2021; K. Putri et al., 2021). Therefore needs analysis research like what has been done at this time is important, because so that the innovative products developed can suit the needs, and be able to overcome the problems currently faced by students (Sun et al., 2021; Haryanti et al., 2021). By using technology such as smartphones in sociology learning, the learning process will certainly be more interesting, students will find it easier to understand the material presented by the teacher (Suminar, 2019; Hariyani et al., 2021). Then, the use of technology can also make the learning process more dynamic, so that it will naturally improve the quality of learning outcomes.

Almost as a whole, the presence of smartphone-based technology accompanied by various advantages in it can actually have a positive impact on improving academic quality. Through smartphones access to subject matter is not limited by noise and time, which allows students to study material in real time (Ilic, 2021; Sousa & Rocha, 2019). In line with the findings of previous studies, smartphones can also make a positive contribution to achieving 21st century competencies such as critical thinking skills (Djamas et al., 2018; Sudrajat et al., 2018). This critical thinking ability is important for students to master in order to face the challenges going forward, the role of digital technology is quite important in helping students to be able to achieve these competencies. As research shows that there is an increase in students' critical reasoning abilities when students use technology in learning (Aryanti et al., 2017). In addition, the use of technology can also increase student learning motivation, as well as social collaboration activities. Learning media formats that can be operated on smartphones also tend to vary, as for example the research, the results of his research succeeded in showing that smartphone applications in augmented reality format are innovations to improve student learning experiences, where smartphone applications in augmented reality format tend to increase the efficiency of student learning time (Yip et al., 2019). The difference between this study and various previous studies is in the subject of students and the subjects used, where this research focuses on learning activities and the use of instructional media in sociology subjects, so it is hoped that these relevant studies can become the basis and framework for innovative thinking so that learning Sociologists are also starting to utilize and integrate technology. The potential use of mobile learning in the learning process cannot be separated from various empirical and theoretical facts that have proven that mobile learning makes a positive contribution to student activity and competency achievement. As a form of innovation in optimizing the achievement of learning objectives, mobile learning is a solutive approach to be applied. However, this research is only limited to the process of identifying and analyzing needs in order to find the right solution and according to needs. Through this research, other researchers can use the results of this research as a basis for decisions so that teachers begin to adjust to the presence of technology and start

developing a smartphone-based learning product. Considering that the use of smartphones for the learning process has a very clear role in creating a conducive and dynamic learning climate.

4. CONCLUSION

Through the results of the research conducted, it appears that it can answer the research objectives, namely identifying the types of technology used by teachers during the learning process. The results of students' responses to the distributed questionnaires obtained information that so far the learning media used were not technology-based and less varied. It can be seen from the research that smartphones have a great opportunity to be applied to the learning process. Given that students are currently very familiar with smartphone technology and the massive use of smartphones in various fields, including education. The learning experience that students get when the learning process is integrated with ICT is proven according to several studies to be able to make a positive contribution. It is hoped that through this research it can become a foundation for teachers so that in the future, they can optimize the role of smartphones to support the learning proces.

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