



## Smartphone-Based Application “quizizz” as a Learning Media

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### Abstract

This study aims to find out the application and contribution of smartphone-based application ““quizizz”” as learning media in the University of PGRI Madiun. The method used in this research is descriptive qualitative. Data analysis technique used is an interactive method, including the process of collecting data, reducing data (compiling data in patterns, categories and specific issues), presenting data (compiling data in the form of matrices, graphs, networks, certain charts) and drawing conclusions. This research was conducted at the University of PGRI Madiun. The subjects of this study were students in Accounting and Economic Education. The results showed that the usage of smartphone-based application “quizizz” as learning media can make students enthusiastic in participating in learning, so students can focus and maximize the use of smartphones as a fun learning media. The concept of maximum learning will have an impact on improving student learning outcomes.

### How to Cite

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## INTRODUCTION

In teaching and learning activities, there are five important components that can be used for ongoing learning activities, these components include the objectives, materials, methods, media, and evaluations of learning. These five aspects affect each other. The choice of one particular teaching method will have an impact on the type of learning media that is appropriate, without forgetting three other important aspects, namely the objectives, materials, and evaluations of learning. One of the main functions of learning media is as a teaching aid that influences, motivates, and manages learning environment (Falahudin, 2014). In line with the revealed research (Hanifah, Mulyadi, & Tanuatmodjo, 2017), the use of instructional media has a positive effect on student motivation in Accounting. From these results it can be concluded that learning media is used as a motivation for students who have an impact on improving student learning outcomes.

Based on the results of the National Survey of Internet User penetration of the total population conducted by the Indonesian Internet Service Providers Association in 2018 internet users in East Java based on field data from March 9 to April 14, 2019 ranks fifth with 58.9% internet users 41.1% non-internet users after DKI Jakarta in the first position, DI Yogyakarta in the second position, Central Java in the third position, East Java in the fourth position, West Java in the fifth position. Penetration of internet users based on education and occupation levels 92.6% of internet users and 7.4% of non-internet users. This shows the high enthusiasm of teenagers in using information technology. Technology can support education and improve the effectiveness of student learning. Students become more comfortable and do not get bored.

The general description of learning based on a survey conducted at PGRI Madiun University, especially in the Economics and Accounting study program, obtained 41% or 7 lecturers use smartphone-based learning

media and 59% equivalent to 10 lecturers still do not use smartphone-based learning. So that when learning in class there are students who still use their cellphones for non-learning activities. This is because the learning activities used by some lecturers is still conventional where students still lack an active role in the learning process and the use of information technology is still not optimal. Internet-based learning has not been used maximally as an interpreter, but is only used as a support in the teaching and learning process, not as a medium for learning. Along with the development of technology, it also has a big influence on the development of education in Indonesia.

The use of e-learning is very possible in the current digital era learning process. Utilization of internet-based e-learning learning in the learning process at the University of PGRI Madiun especially Accounting and Economics Education Program which are still not optimal makes students not free to use their cellphones for learning activities. Students are cooler to use their cellphones with games, and various social media applications that sometimes do not support the learning process. An educator must always be sensitive to changes in development as one example is the use of mobile phones that are not well targeted. The use of appropriate media is expected to improve learning outcomes and increase student motivation. According to (Wilson & Bolliger, 2013) mobile learning aims to facilitate learning learners anywhere and anytime in accordance with the time available. Virtual learning can be accessed virtually anywhere, by providing access to the delivery of material. Previous studies have been carried out using the "quizizz" application. The research was conducted by Wulansari (2019) with the title Effect of Cooperative Learning Model Type Student Teams Achievement Division (STAD) Assisted by "quizizz" in the Subject Subjects of History of the Material of the Proclamation of Indonesian Independence to the Learning Outcomes of Students of Class XI IPS 4 of SMA Negeri 5 Tasikmalaya in Academic

Year 2018 / 2019. The results showed that the “quizizz”-assisted Student Teams Achievement Division (STAD) cooperative learning model affected student learning outcomes. This is evidenced by the average learning outcomes of students who use the cooperative learning model type Student Teams Achievement Division (STAD) aided by “quizizz” at 82.50 while the average learning outcomes of students who use the lecture method is 72.18.

The use of smartphones with the “quizizz” application as learning media is considered suitable to be applied to learning within the scope of the University of PGRI Madiun because of adequate Wi-Fi facilities and infrastructure that supports learning is expected to support the learning process, so that the concept of providing material can be maximally distributed by students.

The purpose of this study was to analyze the application of smartphone-based “quizizz” applications as learning media in the University of PGRI Madiun environment, and to find out smartphone-based “quizizz” applications effectively applied to learning in the University of PGRI Madiun environment

Based on the description above, the researchers intend to conduct research related to the application of Smartphone-Based “quizizz” Application as a Learning Media of PGRI Madiun University.

According to Depdiknas (2003) the term media comes from Latin which is a plural form of “medium” which literally means an intermediary or introduction. The general meaning is anything that can distribute information from information sources to recipients of information. Teaching and learning process are basically also a communication process, so the media used in learning is called learning media. Learning media is a part of learning resources which is a combination of software (learning materials) and hardware (learning tools). The Association for Education and Communication Technology (AECT) defines the word media as all forms and channels used to process information. The National Education Association (NEA) defines media as any-

thing that can be manipulated, seen, heard, read or talked about along with the instruments used for these activities.

Meanwhile, Hamalik (2003) argues that the media is a human extension that allows it to influence others who do not have direct contact with him. In accordance with this formulation, communication media include letters, television, films and telephones, roads and railways are media that enable one to communicate with others.

Furthermore Hamalik (2003) distinguishes the notion of media into two, namely in the narrow sense and in the broad sense. In the narrow sense, teaching media only covers media that can be used effectively in a planned teaching process, whereas in a broad sense, media does not only cover complex electronic communication media, but also includes simple tools, such as slides, photography, diagrams, and teacher-made charts, tangible objects, and out-of-school visits. In line with this view, teachers are also considered as a medium of presentation, in addition to radio and television because they both need and use a lot of time to convey information to students.

According to Hamalik (2003) the teaching media formulates “... as the carries of messages, from some transmitting sources (which may be a human being or an intimate object), to the receiver of the messages (which is our case is the learner). As for Djamarah & Zain (2002) define the media as a tool that can be used as a vehicle for channeling learning information or channeling messages to achieve learning objectives. In the context of media as a source of learning, then broadly the media can be interpreted with humans, objects, or events that enable students to gain knowledge and skills. In essence the various restrictions stated above contain the same basic understanding. In communicating we need media or means. In general, the meaning of the media is anything that can distribute information from information sources to recipients of information. So the learning media is “software” in the form of messages or educational information that is presented by using

an equipment (hardware) so that the message / information can reach students. Here it is clear that media differs from equipment but both are interrelated elements in an effort to convey educational messages / information to students. Thus it can be concluded that (a) the media is a container of messages that the source or channel wants to forward to the target or recipient of the message, and (b) that the material to be conveyed is a learning message, and that the goal to be achieved is the learning process. Learning media is a condition of each person, material, tool, or event can create conditions enabling students to receive knowledge, skills, and attitudes (Sri Anitah, 2010). Media is a tool or a medium as an intermediary to deliver instructional learning materials to students. The purpose of learning media according to Karo-Karo & Rohani (2018) is to make the learning process more clear and interesting, the learning process becomes more interactive, efficiency in time and effort Improving the quality of student learning outcomes, allowing the learning process to be carried out anywhere and when course, fostering positive student attitudes towards the material and learning process, changing the teacher's role to be more positive and productive direction.

As an educator we must be able to choose learning criteria in accordance with class learning, because the use of instructional media which is less precise will have an impact on the less optimal teaching and learning process. The selection criteria that must be considered include the intended use, media user objectives, media characteristics, time, cost and availability. (Falahudin, 2014). While some principles that must be considered by educators in this study are lecturers' decision to choose and use instructional media according to opinion among others (Sri Anitah, 2010), they must be able to adjust to the existing curriculum, provide broad opportunities for students to interact and provide significant motivation, supports learning materials, is easy to use and provides clarity to students about the material being studied, how media works does not contain conflicts or technical problems and is easy

to install and repair.

In this globalization and information era the use of Information Technology (IT) based learning media has become a necessity and a demand, but its implementation is not an easy thing. In using these media teachers must pay attention to several techniques so that the media used can be utilized to the maximum and not deviate from the media's objectives. According to Hartanto (2016) there are 3 (three) important things as requirements for electronic learning activities (e-learning), namely: (a) learning activities carried out through network utilization, in this case limited to the use of the internet, (b) availability of service support learning that can be utilized by participants in learning, for example External Harddisk, Flaskdisk, CD-ROM, or printed material, and (c) the availability of tutor support services that can help participants learn when experiencing difficulties. From the statement above, it can be categorized that the Computer and LCD Projector media are design media which in their use are needed special designs and are designed so that they can be utilized. The hardware (hardware) that is used to inspire the media is to use a complete computer unit that is already connected to the Projector LCD. Thus this media should attract the attention of students in the learning process. Computer / internet network technology provides benefits for the user to communicate directly with other users. This is made possible by the creation of a device called a modem. The computer/internet network gives participants the possibility to carry out written communication and exchange ideas about the learning activities they carry out. Computer networks can be designed in such a way that lecturers can communicate with students and students can interact learning with other students. Learning interactions using computer networks can not only be done individually, but also to support group learning activities. The use of computer networks in distance education systems is also known as the Computer Conferencing System (CCF). Usually this system is done via electronic mail or e-mail. E-learning can be defined

as a form of information technology that is applied in the field of education in the form of cyberspace. The term e-learning is more precisely intended as an effort to make a transformation of the learning process in schools or colleges into digital form which is bridged by internet technology (Munir, 2009). In classroom learning activities, multimedia can have a role as an optional supplement, complementary, or even substitute for the teacher (Doring & Roblyer, 2010).

First, multimedia is said to be a supplement if the teacher has a freedom of choice, whether or not to use multimedia for certain subject matter. In this case, there is no requirement for teachers or students to utilize multimedia. Although optional, teachers who use multimedia appropriately in teaching students or students themselves who seek to find and then use multimedia are surely going to have additional knowledge or insight.

Second, the complementary multimedia is said to be a complement if the multimedia is programmed to complement or support the learning material received by students in the classroom. As a complement, multimedia is programmed as reinforcement (enrichment) or remedial material for students' participation in learning activities. Multimedia is said to be enrichment if students who can quickly master the material delivered by the teacher are given the opportunity to utilize certain multimedia that is specifically developed. The aim is to further strengthen the level of student mastery of the subject matter presented by the teacher in the classroom. Multimedia is said to be a remedial program if students who have difficulty in understanding the subject matter presented by the teacher in class are given the opportunity to utilize multimedia that is specifically designed with the aim that students more easily understand the subject matter presented by the teacher in class.

## METHODS

This type of research is descriptive-qualitative. Qualitative research is research that

uses a natural setting, with the intention of interpreting phenomena that occur and is carried out by involving various existing methods (Moleong, 2012). This research used a case study approach. This model refers to the paradigm that seeks the truth of the phenomena in the PGRI Madiun University environment to analyze the Application of Smartphone-Based Applications "quizzz" as a Learning Media in the PGRI Madiun University environment, which is applied in Accounting Education for students who take multimedia courses of 22 students and study programs in Economics Education at 20 students took computer courses. The subject of this research is students who take courses. Students taking multimedia courses and students taking computer application courses.

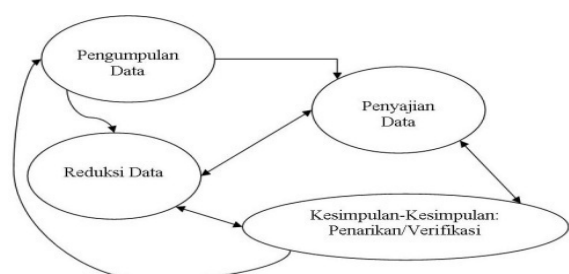
Data sources from: (1) primary data sources. Nazir (2014) explains that primary data sources are basic sources that are primary evidence or witnesses of past events. The data was obtained from informants that were made as research objects by students, lecturers who taught multimedia learning subjects; (2) Secondary Data Sources, secondary data sources are sources that directly provide data to data collectors, for example through other people or through documents. (Sugiono, 2014). Secondary data used are (a). Documents and records in the form of data from learning outcomes in the form of final grades and practice values (b). Literature material from books, previous research and relevant scientific journals.

Data collection technique used: (1) observation, social situation yakni place, actor, dan activities berikut ini: The observation model uses the passive participation approach, referring to the concept offered Prastowo (2011) called the social situation, namely the following places, actors, and activities: accounting education study program and Economics Education study program as the main place, the culprits are students who take multimedia courses and students who take computer application courses, observe during the learning process by using the smartphone-based appli-

cation “quizizz”, the interview model was a structured type.

Interviews were conducted with: (1) lecturer, for getting information about student development in learning (2). Head of Study Program as an observer in curriculum and learning (3) students who take multimedia courses and students who take Computer Application courses. Then test also needed, because the use of this method to obtain data in the form of results achieved from the implementation of learning using the smartphone-based application “quizizz” in the Accounting Education and Economics Education Study Program. The last is document analysis, form: (1) Archives or documents about Student Data on Accounting and Economics Education Study Program, (2) Documentation in the form of photos of activities and (3) Proof of record of activities in learning practice.

The data validity technique used was the source triangulation with the models offered (Nurkamto, 2006). This research used data analysis from Miles and Huberman’s interactive plot which can be described as follows.



**Figure 1.** The Qualitative Analysis Model of the Miles and Huberman Interactive Model

## RESULT AND DISCUSSION

This analysis model refers to the interactive flow of Miles and Huberman with the following steps collecting data, reducing data, drawing conclusions. Researchers conducted observations and interviews about the role of using mobile phones before implementing the “quizizz” application in learning on campus. Based on observations made, students are quite ready to start learning, it can be seen that

there is student attention when the lecturer speaks in front of the class. Students pay attention when the lecturer explains what will be learned today and answers the questions given by the lecturer. At the time of study there were some students who used cellphones to take notes on the board and then copy them in books. Apart from that cellphones are also used to reflect, open Instagram, open lines, view photos and videos and to chat. When the lecturer asks a question, there are some students who try to answer the question without being instructed by the lecturer. Students use cellphones to do assignments given by the lecturer. When the learning process ends, students and lecturers make conclusions about what they have learned today.

The use of cell phones in the learning process in Economics Education and Accounting Education, namely there are some students who use cellphones to take notes of notes written on the board, then copy them in books. Apart from that cellphones are also used to reflect, open Instagram, open lines, view photos and videos and to chat, but some also get photos of material notes from their class groups. So the notes are photographed and distributed in class groups. Lecturers allow students to use cellphones to find information related to the material being studied. During the 30-minute of break, there were some students who used cellphones to open social media such as WhatsApp, Instagram, YouTube and others. There are also those who use cellphones to find information related to the task they are working on. In addition, there are some students who also use a calculator found on their mobile to calculate when doing their assignments.

In this section the researchers will explain the results of the interviews that have been obtained. The results of this interview have been made transcripts, then the transcripts will be reduced by researchers, then after data reduction the researcher will present the data or conclude the data. The data presented is made in the form of points based on interview questions. After that the researchers

made a descriptive conclusion. After making a conclusion, the researchers will also conclude descriptively whether this research can answer the problem formulation or not. Analysis of smartphone-based application “quizizz” as a learning media in the University of PGRI Madiun environment which includes feasibility studies, interfaces using “quizizz” application and “quizizz” application practice activities. The initial steps taken include: login to the lecturer, student, admin and exchange of information, material, lectures provided. Then content analysis includes analysis to find out online course descriptions for anyone who has accessed the system. The next stage is the interaction analysis which is a user analysis that will interact with the “quizizz” application and authentication takes place, where the user name and password / class code that has been entered automatically randomly according to the database system that the application can enter. Students can immediately use all the facilities provided by the system after a successful login process. After this is done the next process is functional analysis which will discuss the functions that exist in the quiz application and conduct an evaluation in the form of test questions contained in the “quizizz” application. Measures of success The effectiveness of the application of learning with the “quizizz” Application includes (a) good material organization, (b) effective communication, (c) mastery and enthusiasm for the subject matter, (d) positive attitude towards students, (e) giving fair value, (f) flexibility in the learning approach, and (g) student learning outcomes.

### **Feasibility Study**

Feasibility study is the process of studying and analyzing problems that have been found in accordance with the ultimate goal to be achieved. In the application of the “quizizz” Application, the steps to be carried out by the feasibility study are to learn how students and lecturers apply the quiz application

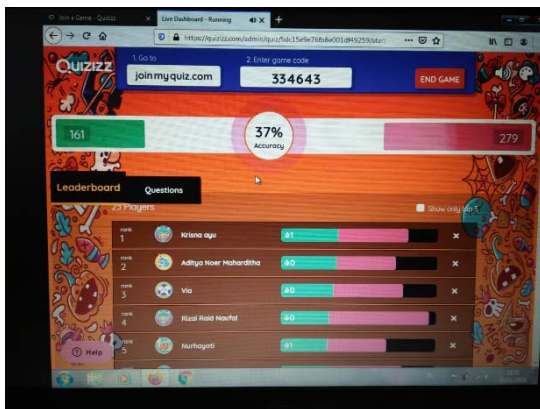
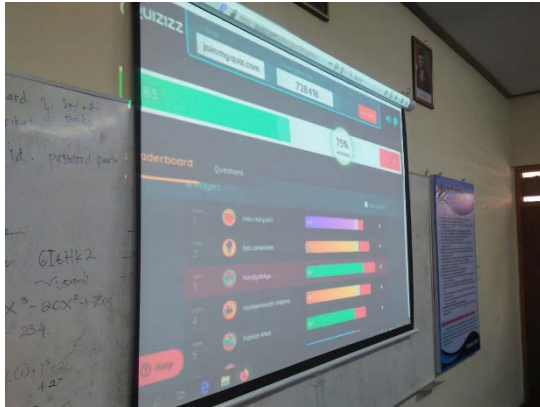
in the learning and teaching process at PGRI Madiun University. Understand the extent of using the “quizizz” application in the PGRI Madiun University environment, Learn the benefits of the “quizizz” application for students and lecturers at PGRI Madiun University.

Based on the research that has been done, a feasibility study result was obtained a conclusion that the use of the “quizizz” application in the PGRI Madiun University, in terms of the ease of being operated by students, could add the experience of students and group collaboration.

### **Technical and Operational Feasibility of “quizizz” Applications**

Technical feasibility that the “quizizz” application has met the standards set to facilitate students and lecturers in the learning process. That is all evident from the use of the “quizizz” application that has been used efficiently by students and lecturers in the “quizizz” process where students can access the material needed through “quizizz”. In addition, by adjusting the schedule that has been adjusted by the lecturer, the use of the “quizizz” application as an online learning medium can be balanced with the direct learning process. Students can easily access the quiz application whenever and wherever they are. This allows them to keep their information up to date even if they are outside the area. Whereas for lecturers who teach with the existence of this “quizizz” help in the evaluation of learning at classroom meetings.

Learn with the “quizizz” application means learning that combines direct activities and internet-based activities through each Smartphone. The learning quiz application has the following characters: Lecturers can hold classroom activities at least 14 times. Internet-based activities are built according to certain requirements considered equivalent to classroom activities. Classroom and online activities are configured alternately.



**Figure 2.** Students answer the questions contained in the application

Results will soon appear and be recorded as well as the effectiveness of the application of “quizizz” Application in learning in the PGRI Madiun University environment, which includes: Organizing good material, In applying the “quizizz” application the lecturer makes plans about when the application of the “quizizz” Application is carried out, the material or theory can be given to students at the meeting beginning and next in accor-

dance with the learning plan that has been prepared. Seeing students’ initial abilities by giving verbal tests to students. Lecturers prepare question material that will be included in quiz applications and at predetermined meetings students are ready to apply it, effective communication, including the presentation of material clearly raised in the quiz application, fluency in speaking, interpretation of abstract ideas with examples, speaking skills that good (tone, intonation, expression), and the ability to hear, mastery and enthusiasm for the lecture material, Increased student enthusiasm for the lecture material applied with the “quizizz” application. This is evidenced by students responding quickly in joining via smart phones, each student entering an existing virtual class either independently or in a group. Students answer more concentration in answering questions on their respective smartphones. Positive attitude towards students, in daily reality, not all messages delivered can be well received by the recipient, this is caused by a disruption in communication. Interference occurs because the message conveyed is not very clear or not explained in terms that are easily understood. The negative attitude is that there is one student who still answers carelessly because the previous meeting he did not attend the lecture and missed the material given previously. Giving a fair score, in the quiz application the scores given are very fair because if a student answers questions online via a smartphone then the results will immediately appear when the correct green color and a checklist symbol will appear and if wrong then the correct answer appears. After students answer all questions the total score will be immediately known by the students concerned.

### Discussion

Based on the results of research and theory that has been presented: first, analysis of applying smartphone-based “quizizz” applications as a learning media in the University of PGRI Madiun environment includes. Second, organizing good material. The use of smartphones with the “quizizz” application



as an learning media is considered suitable to be applied in learning activities at the University of PGRI Madiun because of the adequate Wi-Fi facilities and infrastructure which supports the learning process, so that the concept of providing material can be maximally distributed by students. Third, effective communication, learning media can be developed on mobile devices that are easy to carry anywhere such as smartphones and tablets (Squire, 2009). According to Wilson & Bolliger (2013) mobile learning aims to facilitate learning learners anywhere and anytime in accordance with the time available. Virtual learning can be accessed virtually anywhere, by providing access to the delivery of material. This means being able to interact effectively in learning.

Fourth, mastery and enthusiasm for the subject matter. Based on the theory being studied Azhar (2007) students should be given more concrete experience so that the message to be conveyed really can achieve the goals and objectives. Through the application "quizizz" provides a real and applicable experience to students so that students in learning do not feel bored and are able to increase concentration and enthusiasm for learning.

Fifth, positive attitude towards students. The use of games also fosters student character according to (Irwan et al., 2019). This gives a sense of comfort for students and increases the enthusiasm to attend lectures to completion. Seventh, granting fair value. Student learning outcomes are directly evaluated by the system and the total value can be known. Student learning outcomes will be sent by lecturers in the course via e-mail from the student concerned. Eight, flexibility in the learning approach. This "quizizz" application can be applied to other subjects. The questions created are not only in the form of question descriptions, can be in the form of drawings, formulas, diagrams that can be applied in all study programs. Ninth, student learning outcomes. Based on research results Sidhu (2009) the use of multimedia in learning can improve learning outcomes 56% greater, consistency in learning 50-60% better and resilience in me-

mory 25 -50% higher.

## CONCLUSION

The effectiveness of smartphone-based application "quizizz" is reached in learning activities at PGRI Madiun University. "Quizizz" which is a web tool for creating interactive quiz games that can be used as a learning medium. "Quizizz" is the best alternative choice used as a learning medium available in mobile applications such as Android and App Store and can be used as a website through a browser on a computer. "quizizz" is an interactive quiz application that is more effective in increasing student enthusiasm in learning because it replaces the old quiz way that only involves paper and pens but in the form of questions created by a lecturer online with the student learning evaluation process capable of carrying out such learning using the "quizizz" application in their cellphone. Students are more interested, more focus and are serious in implementing it. Feedback from students is to apply more this application to other subjects because it is more interactive and focus.

Students have easier access to quizizz.com by entering the join code. The use of learning media that can be accessed through students' cellphones is a positive use of technology and can increase student interest in learning. In addition, the features available in "quizizz" can also make it easy for lecturers in assigning assignments and assessment processes which can be downloaded in Excel format and sent the results to the e-mail of each student. It can be concluded that the application of smartphone-based application "quizizz" is effectively applied to students of Accounting Education Study Program in multimedia subjects and Economics Education Study Program in computer application courses.

## REFERENCES

- Andi Pramono. (2006). *Presentasi Multimedia dengan Macro Media Flash*. Andi Yogyakarta.
- Azhar, A. (2007). *Media pembelajaran*, Jakarta: PT.

- Raja Grafindo Persada, 15–85.
- Depdiknas, R. I. (2003). Departemen Pendidikan Nasional Republik Indonesia.
- Djamarah, S. B., & Zain, A. (2002). *Belajar dan pembelajaran*. Jakarta: Rineka Cipta.
- Doering, A. H., & Roblyer, M. D. (2010). *Integrating educational technology into teaching*. Boston: Pearson.
- Falahudin, I. (2014). Pemanfaatan media dalam pembelajaran. *Jurnal Lingkar Widyaiswara*, 1(4), 104–117.
- Hamalik, O. (2003). *Perencanaan pengajaran berdasarkan pendekatan sistem*. Bumi Aksara.
- Hanifah, T. N., Mulyadi, A., & Tanuatmodjo, H. (2017). Pengaruh self-efficacy terhadap kemandirian belajar siswa. *JPAK: Jurnal Pendidikan Akuntansi Dan Keuangan*, 5(2), 107–116.
- Hartanto, W. (2016). Penggunaan E-Learning Sebagai Media Pembelajaran. *Jurnal Pendidikan Ekonomi: Jurnal Ilmiah Ilmu Pendidikan, Ilmu Ekonomi dan Ilmu Sosial*, 10(1).
- Irwan, I., Luthfi, Z. F., & Waldi, A. (2019). Efektifitas Penggunaan Kahoot! untuk Meningkatkan Hasil Belajar Siswa [Effectiveness of Using Kahoot! to Improve Student Learning Outcomes]. *PEDAGOGIA: Jurnal Pendidikan*, 8(1), 95–104.
- Ju, S. Y., & Adam, Z. (2018). Implementing “quizizz” as Game Based Learning in the Arabic Classroom. *European Journal of Social Science Education and Research*, 5(1), 194–198.
- Karo-Karo, I. R., & Rohani, R. (2018). Manfaat Media Dalam Pembelajaran. *AXIOM: Jurnal Pendidikan Dan Matematika*, 7(1).
- Miles, M. B. & A. M. H. (2009). *Analisis Data Kualitatif*. Jakarta: UI-Press.
- Moleong, L. J. (1989). *Metodologi penelitian kualitatif*.
- Munir, D. (2009). *Pembelajaran Jarak Jauh Berbasis Teknologi Informasi dan Komunikasi*. Bandung: Alfabeta.
- Nazir, M. (2014). *Metode Penelitian*. GHALIA Indonesia.
- Nurkamto, J. (2006). *Metodologi Penelitian Kualitatif*. Surakarta. UNS Press.
- Prastowo, A. (2011). *Panduan kreatif membuat bahan ajar inovatif*. Yogyakarta: DIVA press.
- Salam, A. R. (2011). *Pengembangan Media Pembelajaran Berbasis Komputer untuk Mata Diklat Mengoperasikan Mesin CNC Dasar di SMK Negeri 2 Depok Sleman Yogyakarta*. Yogyakarta: Program Studi Pendidikan Teknik Mesin Fakultas Teknik Universitas Negeri Yogyakarta.
- Sidhu, M. S. (2009). *Technology-Assisted Problem Solving for Engineering Education: Interactive Multimedia Applications: Interactive Multimedia Applications*. IGI Global.
- Squire, K. (2009). Mobile media learning: multiplicities of place. *On the Horizon*, 17(1), 70–80.
- Sri Anitah. (2010). *Media Pembelajaran*. UNS Press.
- Sugiono. (2014). *Metode Penelitian Pendidikan*. ALFA BETA.
- Wilson, M., & Bolliger, D. U. (2013). Mobile learning: endless possibilities for allied health educators. *Journal of Diagnostic Medical Sonography*, 29(5), 220–224.
- Wulansari, M. (2019). *Pengaruh Model Pembelajaran Kooperatif Tipe Student Teams Achievement Division (Stad) Berbantuan “Quizizz” pada Mata Pelajaran Sejarah Materi Pokok Proklamasi Kemerdekaan Indonesia Terhadap Hasil Belajar Siswa Kelas XI IPSs 4 SMA Negeri 5 Tasikmalaya Tahun Ajaran 2018/2019*. Universitas Siliwangi.
- Yana, A. U., & Antasari, L. (2019). Analisis Pemahaman Konsep Gelombang Mekanik Melalui Aplikasi Online “Quizizz”. *Jurnal Pendidikan Sains Indonesia (Indonesian Journal of Science Education)*, 7(2), 143–152.