



## Profile of Electronic and Digital Media Learning Implementation During 2018-2022

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### ABSTRACT

This research aims to describe and analyze the implementation of digital and electronic media as learning media during the COVID-19 pandemic. This research is a qualitative research using a literacy study method based on articles and books relevant to the implementation of digital and electronic learning media in Indonesia in the period 2018-2022. As for analyzing research data, the author uses inductive thinking methods. This method brings together various information from previous research related to the use of digital and electronic media as learning media during the COVID-19 pandemic. to be generalized into a new idea whose validity can be justified. Based on the results of a study of 20 articles from previous research, it can be seen that research on digital and electronic media as learning media in 2018-2022 contains development and application during the Covid-19 pandemic. The types and methods of research carried out varied including research and development, qualitative, quantitative, and literature review research. The development and application of digital and electronic media has proven to be still not fully effective in the learning process during this pandemic, the difficulty of internet access is still an obstacle for several studies. However, there are also many studies that show that the use of digital and electronic media in the learning process is considered effective, interesting and easily accessible to students wherever and whenever.

### INTRODUCTION

The challenge is getting bigger to grow scientific literacy skills during this pandemic. The Covid-19 pandemic that has hit various parts of the world has changed various aspects of human life, especially in the realm of education in Indonesia (Ratu et al., 2020). This affects the change and renewal of learning patterns to be applied. At the time before the pandemic, students could easily carry out learning activities directly, but after the pandemic hit, learning activities had to be carried out remotely in order to comply with the health protocols delivered by the government. So that online learning is considered a solution to overcome learning difficulties directly during the pandemic (Atsani, 2020; Herliandry & Suban, 2020; Ratu et al., 2020). This poses a challenge to all parties, both educators and students, to maintain the learning process in transferring knowledge, attitudes and skills, even though it is carried out remotely.

The process of implementing distance learning is the right solution during the Covid-19 pandemic. The distance learning process requires the following three things: (a) learning models, (b) instructional and learning strategies, (c) online learning media (Atsani, 2020; Herliandry and Suban, 2020). These three components form an interactive relationship, in which there is a learning model that is structured as a social process that

informs the design of the online learning environment, leading to the specification of instructional and learning strategies that specifically make it possible to facilitate learning through the use of learning technology (Atsani, 2020). So that educators in the distance learning process must make an innovation in making learning media. Therefore, learning media in electronic or digital form plays an important role in the distance learning process.

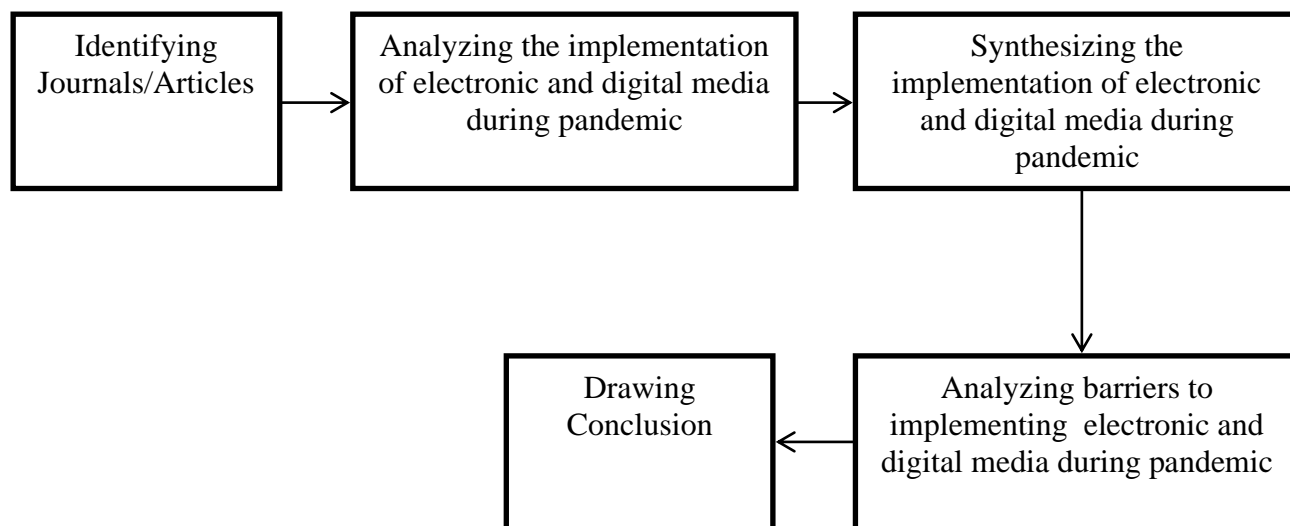
The use of digital or electronic learning media is felt to be able to help educators in overcoming the delivery of teaching materials to students during the pandemic. The use of digital media can be a solution for students to understand the subject matter well (Efendi et al., 2021). The use of electronic media or e-learning is a new way to do learning with internet access, in order to improve the learning environment without requiring students to come to the classroom (Rahmanto & Bunyamin, 2020). Thus, e-learning can be interpreted as a transformation of the learning process in schools or universities into digital form which is bridged by internet technology (Syahfitri & Muis, 2020). a transformation of the learning process in schools or colleges into digital form which is bridged by internet technology (Syahfitri & Muis, 2020). So that during the Covid-19 pandemic, various forms of e-learning have been developed and applied in the learning process.

Research on the development and application of electronic and digital learning media has been widely carried out, such as in research (Lestari & Muchlis, 2021) regarding the development of CTL-based Electronic Student Worksheets (Contextual Teaching and Learning) which were successfully developed with categories suitable for use. In addition, there is research from (Efendi et al., 2021) regarding the use of digital media in the learning process showing an increase in the ability of students' cognitive learning outcomes and creativity. However, the review regarding the development and application of electronic and digital learning media to national and international journals based on the similarities and differences of each is very limited. So it is necessary to conduct research to obtain electronic and digital learning media in the science learning process during the pandemic. The results of this study are expected to be used in the development of electronic and digital learning media in the science learning process during the pandemic.

Based on this description, a review of articles was carried out with the aim of providing an overview regarding the development and use of digital and electronic learning media during the Covid-19 pandemic in Indonesia. The purpose of this study is to determine the implementation and impact of using digital and electronic learning media during the Covid-19 pandemic for students and teachers, in the hope of providing information and improvements from the use of digital and electronic learning media.

## RESEARCH METHOD

This research is a literature review that aims to analyze of implementing electronic and digital media in learning activities during pandemic Covid-19. This study was conducted based on previous studies. The literature study has reviewed twenty articles or journals from Google Scholar and published in the 2018-2022 period. As for analyzing research data, the author uses inductive thinking methods. This method brings together various information from previous research related to electronic and digital learning media in Indonesia to be generalized into a new idea whose validity can be accounted for. The steps are then outlined in the flow chart as follows Figure 1.



**Figure 1.** Flowchart research on the profile of electronic and digital media learning implementation during pandemic covid-19.

## RESULTS AND DISCUSSION

The summary of research on the use of electronic and digital learning media during the pandemic (2018 - 2022) is presented in Table 1 (attachment).

### Definition of Digital Learning Media

The word media comes from the Latin *medius* which literally means "middle" of intermediaries or introductions (Batubara, 2021). Media in Arabic can be interpreted as an intermediary or delivery of messages from the sender to the recipient of the message (Rosyid, 2019). So in language it can be concluded that the media is defined as an intermediary. According to Gagne and Brigs in (Yaumi, 2021) the term media refers to terms such as sensory mode (sensory device driven by learning messages), channel of communication (sensory device used in communication), and type of stimulus (Equipment but not a communication mechanism, such as spoken words). According to (Batubara, 2021) learning media are physical means to convey learning content/materials such as: books, films, videos and so on. In addition, learning media also According to the National Education Association in (Hamid et al., 2020) revealed that learning media is a means of communication in print and visual form, including hardware technology. Meanwhile, according to (Rosyid, 2019) media is one component that is arranged as an intermediary in conveying something using certain tools that are adapted to the concept of what will be conveyed. So it can be concluded that learning media can be defined as an intermediary tool that can convey or communicate learning material in various forms, such as books, videos, films and so on.

There are various forms of learning media, one of which is digital technology media. Digital technology media is media whose content is in the form of a combination of data, text, sound, and various types of images stored in digital format and disseminated through broadband optic cable-based networks, satellites and microwave systems (Batubara, 2021). At this time, the use of digital technology as a learning medium is an alternative choice that is very appropriate to the conditions during the COVID-19 pandemic. Learning using digital media can greatly assist students in following the ongoing classroom learning process. In addition, digital media during the pandemic is very effective to assist educators in delivering learning materials that can be accessed

anytime and anywhere as long as the internet network is available. Thus it can be concluded that digital learning media is a learning media that uses the role of the internet or digital technology that can effectively strengthen the learning experience of students that emphasizes high-quality instruction and provides access to interesting content, and can be used to learn anytime and anywhere.

### **Characteristics of Learning Media in the Pandemic Period**

The learning process during the COVID-19 pandemic must continue. Teachers and students must carry out the distance learning process. Distance learning is a learning process that occurs using a medium that allows an interaction between teachers and students at a distance (Tafqihan, 2011). Distance learning is a solution that can be applied in the learning process during a pandemic, because this activity allows the learning process between teachers and students remotely through various communication media with the help of various electronic and digital-based learning media (Aeni & Yusupa, 2018). Some of the components needed in distance learning are: 1) Institutional based (there is an organizing institution); 2) Separation of teachers and students (separation of location and time between teachers and students); 3) Interactive telecommunications (interactive telecommunications occurs); 4) Sharing of data for Learning Experiences (sharing learning media packaged in the form of data, sound, video and multimedia (Tafqihan, 2011). Therefore, the learning process continues even though it does not meet in person. The distance learning process will run effectively and efficiently if it is supported by supporting media. Teachers are required to develop and explore various learning media in accordance with current conditions. Teachers must innovate in learning media that utilize information and communication technology in learning, such as electronic media and e-learning or online learning (Okra & Novera, 2019). So that the media that is in accordance with the learning process during the pandemic is electronic or digital media, where the media can be easily used in the distance learning process.

### **Advantages of Digital and Electronic Learning Media**

The pandemic period has had a considerable impact on people's lives, one of which is in the education sector. The learning process during the pandemic seems to be forced to transform from manual to digital. The application of the learning process in Indonesia using digital and electronic media during the pandemic turned out to have advantages and disadvantages. Based on the analysis data from table 1, it can be seen that some of the advantages of using digital and electronic learning media are as follows: (1) Easily accessible; The use of digital media greatly facilitates teachers and students in accessing all information related to learning (Zulkifli & Ferdiansyah, 2021). Therefore, the knowledge of students will greatly develop with the existence of this digital media. In addition, the information provided by digital media can be accessed anytime and anywhere as long as there is an internet network.. (2) Improve students' cognitive abilities and creativity; Digital and electronic media can help improve students' understanding and absorption of the subject matter being studied. In addition, research conducted by (Efendi et al., 2021) shows that learning media in digital form is stated to be able to improve students' cognitive abilities and creativity in the distance learning process. Therefore, the use of digital media is a solution for students in understanding the subject matter and increasing creativity in students. (3) The learning process becomes interesting and effective during the pandemic; For students the learning

process becomes clear and interesting, more interactive, time and energy efficient, allows the learning process to be carried out anywhere and changes the teacher's role in a more positive and productive direction (Sakkir et al., 2020).

### **Disadvantages of WDigital and Electronic Learning Media**

After describing the advantages of the learning process using electronic and digital media, the following will present the disadvantages of using digital and electronic learning media during the pandemic, namely: (1) Limited internet access; One of the drawbacks of using digital learning media is the limited internet access. This is because in Indonesia there are still many areas that do not have stable internet coverage (Atikah et al., 2021). In addition, the price of internet data usage is still considered quite expensive for some Indonesian people. This causes the ability to take advantage of e-learning is still considered a privilege. (2) Less interaction between teachers and students; Some e-learning learning methods are one-way. This causes the interaction of teachers and students to be reduced so that it will be difficult for you to get further explanations about material that is difficult to understand (Atikah et al., 2021).

### **CONCLUSION**

Based on the results of a literature review on the implementation of digital and electronic learning media, it can be seen that digital and electronic learning media are used effectively in the learning process in Indonesia during the Covid-19 pandemic. Utilization of digital learning media can be done by combining learning models, such as blended learning. The good impact of the implementation of digital and electronic learning media can increase knowledge, creativity, and the use of learning media can be packaged in an attractive way and can be easily accessed by students anywhere and anytime. The obstacle in implementing digital and electronic learning media, namely the limited internet access in Indonesia, is one of the obstacles in the distance learning process. The existence of these obstacles does not prevent teachers from innovating, where teachers can develop and use electronic learning media packaged in jpg, pdf or document formats, so that they can be accessed offline without requiring a large internet quota. So that the learning process using digital and electronic learning media can be used as an alternative solution for teachers in the learning process during the pandemic (2020 - 2022). Future research can improve in add the focusing in selected paper from Scopus databased.

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# Attachment

**Table 1.** Study of literature of electronic and digital learning media (2018 - 2022).

Author (Year)	Sample Characteristics	Research design	Results
Monica & Fitriawati, (2020).	The population of this study was ARS University students class 2017, 2018 and 2019. The sample of this study was 25. people.	The research design is qualitative approach that based on the post-positivism paradigm.	Based on the results of the study, it was found that online learning using the Zoom application was effective. With online learning, students are more independent and encourage students to be more active in their studies.
Efendi et al., (2021).	The population of this study were all students of the pharmacy study program at Efarina University in the second semester of FY. 2020/2021. The sample in this study was taken as many as 60 students.	The research design is quantitative research.	The learning process using digital learning media shows an increase in the ability of students' cognitive learning outcomes and creativity.
Rahmanto & Benjamin, (2020).	The population in this study were 6th semester students in the educational administration practicum course in classes C, D and E by taking 45 students for 3 classes with 15 students representing each class.	The research design is qualitative research by observation.	The results showed that Google classroom was effectively used in the lecture process. Students and lecturers are easy to access according to lecture needs. Google classroom is effective for improving student learning outcomes.
Syahfitri & Muis, (2020).	The sample of this study was library data.	The research design is literature study based on library data.	The use of the webex application in a learning process as e-learning can be relied upon for every educator in maximizing and achieving learning objectives.
Lestari & Muchlis, (2021).	The population of this study were all students of Science class XI senior high school 1 Krian Sidoarjo. The sample of this study was 15 students of Science class class XI-7.	The research design is Research and Development (RnD) using a 4-D development model.	The results obtained in this study are the feasibility of Contextual Teaching and Learning-oriented Electronic Worksheet used in thermochemical materials
Rahayu et al., (2021).	The research sample was 10 elementary school third grade students.	The research design is Research and Development (RnD) using ADDIE model.	In this study, worksheet was produced in electronic form so that it could be accessed flexibly, attractively, and variedly. In addition, the practice questions presented in the electronic worksheet provide students with a better understanding because they are based on High Order Thinking Skills (HOTS).
Nyeneng et al., (2021).	The population is all students of Science class XI The sample is 20 student of XI-4.	The research design is qualitative research by Group pretest-posttest research	The results of the study, it can be concluded that problem-based electronic worksheets can increase student's creativity. Keywords:



Author (Year)	Sample Characteristics	Research design	Results
Atikah et al., (2021).	The sample of this study was library data.	The research design is literature study based on library data.	The Google classroom application is proven to be effective because it can improve student learning outcomes through planning, processes, results and student learning evaluations. However, there are still problems with internet access from the absence of a data network or smartphone used by students
Zulkifli et al., (2021).	The sample of this study was 75 students of the Education Technology Study Program, University of Muhammadiyah Sidenreng Rappang.	The research design is descriptive qualitative research with survey approach.	the use of online learning media Open learning is effectively used in lectures, because students and lecturers can more easily access material according to the needs needed in lectures.
Saputra & Pasha, (2021).	The sample of this study was students 4th grade student at Sumberagung 1 Elementary School.	The research design is Research and Development (RnD) using a 4-D development model.	This research has developed scientific-based comic learning media that have jpg and pdf formats so that they can be accessed offline without the need for a large internet quota. So that the comics developed can be used as online learning media during the Covid-19 pandemic.
Haqien & Rahman, (2020).	The research sample is 32 college students in Jakarta and Depok.	The research design is qualitative research with grounded theory method.	This study shows that the use of the Zoom Meeting application is not very effective for university students in Jakarta and Depok.
Qurrotaini et al., (2020).	5th Grade Elementary School Students at Pondok Petir Elementary School 03.	The research design is descriptive qualitative research.	The results showed that Powtoon can improve the quality of the teaching and learning process, the material presented using the Powtoon application becomes clearer and more real and students understand the material more easily.
Zulfritia et al., (2020).	The sample of this study was parents of students and teachers.	The research design is descriptive qualitative research with survey approach.	The results of the study show the effectiveness of online learning can be considered good and effective.
Tutiasri & Kurniawan, (2020).	The sample of this study was students in Surabaya.	The research design is descriptive qualitative research	The results showed that the use of Youtube media in the learning process was considered interesting and effective.
Ramdani et al., (2020).	The sample of this study was middle school students in Mataram.	The research design is Research and Development	The results of the study was produced an Android-based learning media product on proper science material that could be

Author (Year)	Sample Characteristics	Research design	Results
		(RnD) using a 4-D development model.	implemented in learning, especially during the covid-19 pandemic.
Afriani & Fitria, (2021).	The sample of this study was students 5th Grade Elementary School.	The research design is Research and Development (RnD) using a 4-D development model.	This study states that technology-based learning media assisted by Adobe Flash CS 6 is categorized as very valid by experts. This proves that the learning media developed is very feasible to be implemented in learning, especially during the covid-19 pandemic.
Sya'idah et al., (2020).	The sample of this study was students of Science class XI of senior high school 2 Semarang.	This study used a posttest only control group design and cluster random sampling technique.	The results showed that blended learning with learning media in the form of electronic worksheet had an effect on learning outcomes (aspects of knowledge, skills, and attitudes) of high school students.
Afifaturrochmah et al., (2021)	The sample of this study was students of Science class XI of senior high school 2 Kebumen.	This study was designed as a mix methods study with a sequential explanatory design.	Based on the research results obtained The conclusions are as follows, the profile of the participants' learning outcomes students using the electronic worksheet containing CEP showed good entrepreneurship skills.
Siahaan et al., (2020).	The sample of this study was students of Surya Pematangsiantar Private Junior High School.	The research design is Research and Development (RnD) using a 4-D development model.	In conclusion, android-based media products on natural science materials are feasible to be implemented in learning, especially during the covid-19 pandemic.
Sakkir et al., (2020).	The sample of this study was 20 undergraduate students from english education department of Universitas Muhammadiyah Sidenreng Rappang.	The research design is The mix method (quantitative and qualitative).	This study showed that the students' perceptions of using E-learning. Favorite learning media that are often used are WhatsApp, Zoom, Google Classroom, LMS, and Quizziz.