

Podcasts as a Tool for Learning during the Pandemic

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Abstract: *The COVID-19 pandemic that occurred from 2020 to 2022 has caused enormous changes in various sectors of people's lives, one of which is the education sector. During the pandemic, educational institutions and teachers innovated in delivering learning materials, one of which was by using audio-based technology, namely podcasts. This research was conducted using a systematic literature review of 9 selected journal articles from the Scopus database, with the result that podcasts are useful as a technology-based learning tool in distance learning during the COVID-19 pandemic. Podcasts were chosen because of the various advantages they offer, ranging from flexibility, ease of access, affordable production costs, can be heard anywhere and anytime, as well as emphasis on personalization of learning through tone of voice and intonation, providing more detailed information in the form of narratives, and learning materials that cannot be conveyed properly through writing or face-to-face meetings.*

Keywords: podcast; education; COVID-19 pandemic

1. Introduction

The COVID-19 pandemic that occurred from 2020 to 2022 caused enormous changes in various sectors of society, one of which was the education sector. The pandemic that occurred due to the Corona virus which is very easy to spread has caused people's lives to change because movements and daily activities have to be limited to prevent transmission. Not only in Indonesia, the impact of this pandemic is also being faced by society at the global level. COVID-19 has had a major impact on the characteristics of schools, including research, academic programs, professional staff development, and employment in the academic sector. These impacts are felt not only by students, but also educational institutions, educators, parents of students, and other stakeholders in the education sector (Onyema et al, 2020).

At the beginning of its appearance in Indonesia, the government took firm steps to limit people's movements to prevent wider transmission. The implementation of Large-Scale Social Restrictions (PSBB) on April 17, 2020 (BPK, 2020) in a number of large cities in Indonesia was the starting point for changes in community activities, one of which was the closure of educational institutions and teaching and learning activities. This holiday initially lasted for 2 (two) weeks (Ministry of Education Indonesia, 2020), and was then extended to almost 2 (two) years using the distance learning method. Face-to-face learning was then recommended in September 2021 after the development of COVID-19 cases in Indonesia was more under control (Ministry of Education Indonesia, 2021).

All elements affected by this change of course go through an adaptation process during the implementation of distance learning methods. Previously, this method was not widely used by schools and universities, considering that the conventional method of face-to-face teaching and learning in class before the pandemic was still a commonly used method not only in Indonesia, but in many countries affected by COVID-19. Distance learning triggers anxiety, despair

and boredom among students which affects the learning process. Apart from that, distance learning also triggers obstacles such as lack of interaction between students and communication problems with teachers (Akyildiz, 2020). Apart from that, the biggest obstacle to distance learning is the unequal availability of devices and internet access among all students, as well as the ability of parents to help with the learning process due to limited technological knowledge (Magomedov et al, 2020).

During the pandemic, educational institutions and teachers innovated in delivering learning material so that it was easy to understand and not boring for students remotely. The use of audio in conveying information and material is an important element that has developed a lot during distance learning during the pandemic. Information and Communication Technology (ICT) has become an important aspect in the world of education during the COVID-19 pandemic, one of which is the use of podcasts (portable-on-demand broadcast) which have proven to be effective in helping to learn and increasing students' understanding of the material provided (Nalendra et al, 2020). With the podcast method, students feel more comfortable because they hear the teacher's voice which is more familiar and conveys more detailed information. Apart from that, the podcast method is also effective because it is more flexible in terms of space and time because it can be listened to anytime and anywhere (Wake, 2020). This research will discuss the use of podcasts as a form of audio technology in conveying information in the learning process during the COVID-19 pandemic.

2. Literature Survey

Distance learning is a learning method where access to educational materials is provided for students who are geographically distant. After computers and technology were involved in distance learning, there was a shift in definition to a method where learning material was provided online (on a network), in electronic form. Distance learning uses renewable media and is based on experience to provide

equal learning opportunities to students. Often distance learning is also called e-Learning (online learning). In online learning, all material access is done only through the network and not directly. Online learning not only includes the materials and instruction methods provided, but also includes the use of audio, video, broadcast, and TV (Moore et al, 2011).

Distance learning cannot be separated from technological developments in communication media. A short definition of distance learning is a condition where teachers and students are not in the same room (Perraton, 1988) and must be mediated by some form of technology (Keegan, 1986; Garisson& Shale, 1987). For this reason, the development of media from print to digital to audio and other audio-visual forms plays an important role in the success of distance learning. Since 1950, technology such as television has been used to support learning, namely teaching activities in the studio using video recording methods and then circulating them widely to students. In 1994, radio and broadcast were also used in providing instruction in distance learning, prioritizing the provision of detailed and one-way information. Currently, the use of technology such as electronic mail (e-mail), bulletin board systems, one-and two-way audio and video conferencing is increasingly being used (Sherry, 1995).

The success of distance learning can depend on its capacity to adapt to developments in trends and technology, especially educational technology. Technological changes and developments provide challenges and opportunities in distance learning and give rise to various types of more specific learning such as more active and in-depth learning, as well as more personalized learning for students (Traxler, 2018).

Audio-based technology is usually known as "small media", but in terms of its benefits, this technology is known as the most accessible, cheap technology and can be used for various learning and teaching situations. Audio conveys a personal tone of voice and plays a persuasive role, when used in conjunction with other forms of technology. Audio technology is divided into 2 (two) groups, namely one-way (example: radio, cassette) and two-way (example: telephone, audio conference, audio graphics). As technology develops, audio increasingly becomes an inseparable part of other technologies, and is combined with more and more other things such as video, data, print media, and is continuously digitized (Mishra, 2005).

The purpose of using audio in distance learning includes providing ear-based learning material, so that students can analyze and react to it. Apart from that, usually the use of audio in learning is intended to make the subject matter more personal and more human, emphasize feelings and behavior, and illustrate ideas and thoughts that cannot be interpreted clearly using writing alone (Rowntree, 1994). The use of audio can also create a supportive distance learning environment, by offering ongoing communication between teachers and students. Apart from that, the use of audio can also support students to develop meaningful approaches to learning and develop critical thinking (Anderson & Garrison, 1995).

The Joint Information Systems Committee (JISC) defines the term podcast as a form of publishing documents in the form of audio to the internet, where users or listeners subscribe via certain software or applications (JISC, 2005). Through podcasts, individuals or groups with specific goals can distribute audio documents that are easier and more concise than the audio itself. Ideally, a podcast consists of several elements, namely: an audio document, easy to play or listen to via an MP3 player, easy to download via the internet, produced using RRS (Really Simple Syndication) which allows automatic downloading, and listeners can subscribe in serial form (Kidd, 2012).

Podcasts began to appear in early 2000 when internet technology began to develop rapidly. Since then, the use of podcasts has grown in various fields, such as tourism, entertainment, libraries and education. The content of a podcast can contain audio, video, and image material. Podcast content can also vary, ranging from news podcasts with a duration of 3 minutes every 1 hour, or commentary podcasts with a duration of 20 minutes every day, to discussion podcasts with a duration of 1 hour every 1 week. In 2005, the New Oxford American Dictionary selected "podcasting" as its Word of the Year, and it officially appeared in the English dictionary in 2006. More than 22 million Americans own MP3 players, and play more than 6 million downloaded podcasts for listening. in free time (Hew, 2009).

Podcasts as a tool provide benefits in increasing the effectiveness of distance learning. Podcasts offer a simple and useful form of pedagogical learning to make it easier for teachers in the distance learning process, especially targeting students who are the internet generation, and are accustomed to technological developments in everyday life (Kidd, 2012). The uniqueness of podcasts which are easy to access online, the ease of producing them, and the ease of listening to them anywhere and at any time means that podcasts can be considered as a method that helps distance learning. Students feel the benefits of podcasts because they can be downloaded and listened to anywhere, and are affordable. Meanwhile, for teachers, podcasts require lower costs to produce, and are easy to distribute, thus making the development of podcasts in the world of education continue to grow since the early 2000s (Drew, 2017).

Podcasts created by teachers can be divided into 2 types, namely general lecture podcasts and podcasts as additional learning material. Lecture session podcasts can refer to audio recordings of lecture sessions with a duration of approximately 45 minutes. Meanwhile, podcasts as additional learning material can provide additional support in teaching and learning activities, such as assignment tips and feedback from teachers on assignments given (Hew, 2009). Integrating podcasts into the learning curriculum can provide a different learning experience for students and teachers, especially podcasts that are complemented by other learning materials. One way is to provide supplementary materials such as report formats and learning resources in the form of supporting web addresses. Learning podcasts with the right design and content will help maximize learning potential and can lead to new and unique learning opportunities (Drew, 2017).

Podcasting is an opportunity to increase learning activities outside the classroom, especially in various fields of science such as music, theater, language, and others. Audio-based learning objects provide a valuable option to personalize needs for learning that is more easily delivered through listening methods. In distance learning, concepts and learning objects are often discussed and standards, implementation and applications have been developed, but the content for learning objects is still limited. For this reason, podcasts can offer an effective form of learning to produce and enrich learning objects. The method of using podcasts in distance learning needs to be developed more intensively and its involvement in the learning system (Cebeci&Tekdal, 2006).

The use of podcasts in learning needs to continue to be developed and considered in more detail, especially when used in fields of science that are very sensitive to ethical and humanitarian issues. Maintaining confidentiality, good name and funding sources are important issues to discuss in podcast production, especially in the education industry, as is the case with publication in journals. Responsibility is also emphasized on students, where all information accessed by students must be received, shared and managed wisely (Okonski et al, 2022).

In Indonesia itself, the use of podcasts as a means of distance learning has been widely reported and researched further. Handayani et al in 2019 researched the use of podcasts as a learning method in Islamic private schools during the COVID-19 pandemic, and found that podcasts can provide opportunities for students to enrich their learning experience with new skills that can be useful for future career paths. However, technology-based learning will not be useful if it is not continued after the pandemic and is not carried out simultaneously with the development and innovation of the learning curriculum. The use of podcasts for learning during the pandemic provides entertainment to students who tend to get bored more quickly because they are learning remotely from home

(Handayani et al, 2019). The use of podcasts for school students is also beneficial because it offers flexibility, transcends space and time limits, is effective for learning with varied but simple methods, and is easy to use and affordable because it does not require large amounts of internet (Sudarmoyo, 2020). Podcasts as a learning medium are considered effective for improving learning outcomes, but need to be accompanied by increasing students' interest in accessing learning materials (Mayangsari & Tiara, 2019). Apart from that, podcasts also provide an opportunity to maximize the pedagogical characteristic of learning through listening. In higher education, the use of podcasts is effective as a supplementary media for teachers and students in learning (Hutabarat, 2020).

3. Methods/ Approach

This research was conducted using a systematic literature review by following various correct research stages. There are several stages or steps taken, namely determining the research question, conducting an initial search for previous research or journals to validate ideas, establishing inclusion and exclusion criteria, designing a search strategy, conducting a search in a database of validated journals, carrying out a sorting process from journals. obtained by reading the title and abstract, carrying out the second sorting process by reading the complete contents of the journal and finally writing the manuscript. This research was conducted in April 2023 in the city of Depok, West Java, Indonesia. A search for scientific journals for this research was carried out using several keywords, namely, podcast, education, and COVID-19 in the Scopus database location. The inclusion criteria for this research are that articles must contain the keywords podcast, education, and COVID-19. The journal is also limited to research conducted within the last 4 years (2020-2023). In addition, the research area that is the inclusion criteria for this study is limited to social science research. The exclusion criteria for this study were journal samples published more than 4 years ago.

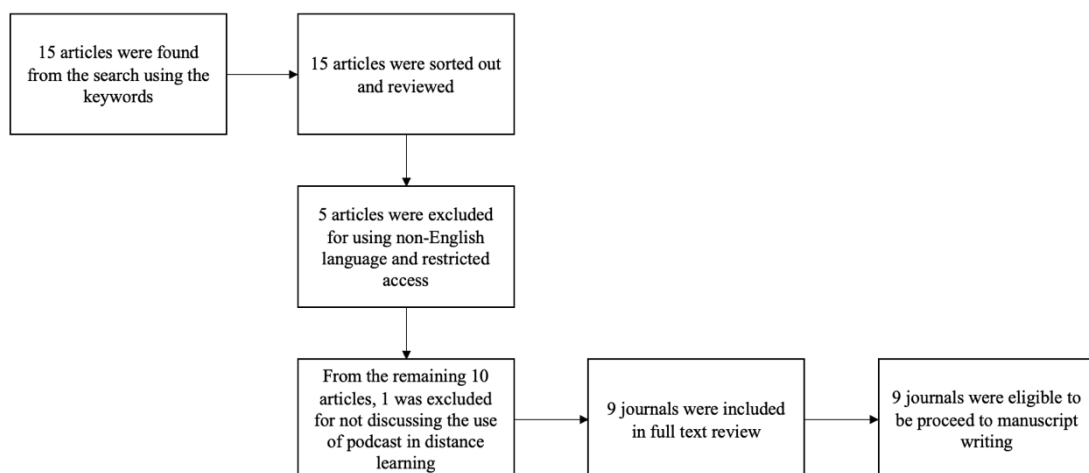


Figure 1: Journal Selection Procedure

4. Result and Discussion

Based on a search using 3 keywords and applying the inclusion criteria, 15 journal articles were found. Next,

reading the titles and abstracts of the 15 journal articles was carried out for the first stage of the sorting process. The results of this process showed that 5 articles could not be used because 1 article was in a language other than English,

and 4 articles could not be accessed publicly. Next, the second stage of the sorting process is reading the full text of the remaining 10 journals. From this process, it was found that 1 article could not be used because it did not discuss the use of podcasts in distance learning. The final number of this sorting process was 9 journal articles which then became part of this research. The nine journal articles discuss the use of podcasts as a tool during distance learning. A comparative study between distance learning during the COVID-19 pandemic in Spain, Italy and Ecuador was carried out with surveys and content analysis in March and April 2020. Respondents to this research were Journalism and Communication Education students in these three countries, and teaching staff at universities. The research was conducted quantitatively and qualitatively, through a survey designed with closed questions and focused on 3 variables, namely (a) distance learning balance during the quarantine period or restrictions on community activities, (b) assessment of available activities and content, and (c) analysis from the role of teacher. The results of the survey, which received 2, 956 responses from 376 students aged 18-29 years and 197 teachers, found that both teachers and students in the three countries mentioned podcasts as a learning tool and agreed that the use of podcasts helped carry out distance learning during the COVID pandemic.-19. (Tejedor et al, 2021)

Using a different research method, Boury et al (2021) used an experimental study of an internship program during the COVID-19 pandemic for students majoring in biological sciences with the task of systematically categorizing several episodes from This Week in Microbiology (TWiM). Students are asked to listen to each episode by labeling the microbiology guidelines and techniques explained in the podcast episodes. This experiment shows results where the use of podcasts as a learning medium during the pandemic is useful for increasing opportunities for students to develop their critical and scientific thinking and be able to utilize open learning resources through podcasts (Boury et al, 2021).

More specifically on learning topics related to entrepreneurship, research related to an entrepreneurship-themed podcast, more precisely aimed at improving the development of entrepreneurial competencies entitled "Enfactor" was carried out by discussing the content of the podcast in the classroom. Enfactor, which is a pedagogical podcast that has a host and guest format, provides more specific discussions related to entrepreneurship compared to television or radio. As a result, there are several benefits felt by students after using the "Enfactor" podcast, namely students can listen to podcasts at the time and place they want, they can increase their grades as evidenced by an increase in the average score between before and after the pandemic, students learn about real experiences from guest or speaker on the podcast episode, building networks and opportunities for entrepreneurial-themed activities even online. This research concludes that podcasts are useful in asynchronous learning because they are easy to access, affordable, provide extensive information with intonation of voice, with challenges regarding the effectiveness of using podcasts and documenting student participation (Vidal et al, 2020).

The use of podcasts is also researched in the field of medical science. Evaluation was carried out on the use of a medical-themed podcast entitled "The Clinical Problem Solvers (CPSolvers)". This podcast has been heard by 25, 000 listeners from 147 countries, helping medical education, especially on the topic of diagnostic reasoning, guided by diagnostic experts and professionals. Using a semi-structured interview method with 3 podcast developers and 8 listeners in April-May 2020, and followed by qualitative thematic analysis. From this research, 3 main goals were obtained from the podcast developers, namely, to teach diagnostic reasoning through a case-based format, change medical culture by prioritizing differences and interesting and fun learning, and to democratize the learning of diagnostic reasoning by utilizing technology. Listener perceptions are in line with the goals of podcast developers and are considered useful and effective in conveying learning related to diagnostic reasoning (Ow, 2021).

Still in the field of medical science, Reynard et al (2021) conducted a systematic literature search to see the preferences for medical information search methods used by doctors during the COVID-19 pandemic. Researchers observed 3 (three) sources of information, namely short written summaries, blogs, and podcasts retrospectively in the period March to September 2020. A total of 64, 687 articles, 37 blogs and 17 podcasts were identified as sources of information that were widely used by doctors. Of the seventeen podcasts, 72, 501 listeners have accessed it and confirmed that audio-based media is still one of the main sources accessed because of the convenience and flexibility it offers (Reynard et al, 2021).

Not only in the medical field, the use of podcasts is also researched in the field of language learning. Ramli (2018) researched the use of podcasts in developing students' English language skills from speaking, writing, and listening. The research was carried out by looking at previous research related to learning English using podcasts and resulted that the use of technology to support learning is beneficial for teachers and students, increasing student participation in the learning process, with learning experiences using technology. Not only students, but teachers also benefit, where they become challenged and motivated to integrate technology such as podcasts in teaching and learning activities (Ramli, 2018).

More generally, Eringfeld (2021) discusses the impact of COVID-19 on higher education in the future, as well as the utopian hopes and dystopian fears that arise within Cambridge University using a podcast entitled "Cambridge Quaranchats". This podcast was formed as an affective, collaborative, and open form of audio journal. In this podcast, the conversation revolves around interviews with students and faculty to discuss the hopes and future of higher education after the pandemic, hopes for distance learning, and fears raised by the pandemic. The results of this research are that there is hope from teachers and students for a future of distance learning that is innovative and more flexible, open, easily accessible in terms of costs, and open to alternative learning media. Several benefits of distance learning are also discussed, namely increasing freedom and accessibility (Eringfeld, 2021).

Similar to the theme of podcasts as a means of discussing distance learning, Pollock et al (2020) opened a forum for discussion and sharing opinions through a podcast entitled "assisted" as a creative form of science learning and professional development. It is increasingly developing during the pandemic because it forces people to consider alternatives to face-to-face learning and professional development. Learning outside the classroom or distance learning is an important topic to be discussed due to changes in current community activities that have occurred due to the COVID-19 pandemic. Podcasts in this research have proven to be useful in building conversations, issues and engaging in topics related to educational information (Pollock, 2020).

Podcasts are also a means of learning related to social activities, which has continued to increase in interest in recent years, although it is controversial because it is considered less effective for conveying social activity content virtually. Research by Fox et al (2021) shows that in Australia, the use of distance learning media as a complement to face-to-face learning is important because there are several information contexts that are difficult to understand or convey only through face-to-face learning, especially during the COVID-19 pandemic. The results of this research are that teachers and educational institutions need to consider technology-based learning tools, such as podcasts, because they can increase student participation for critical reflection and in-depth learning (Fox et al, 2021).

Of the nine studies whose contents have been thoroughly analyzed, there is a similarity that podcasts are useful as a technology-based learning tool in distance learning during the COVID-19 pandemic. Podcasts are used not only as a learning tool prepared by teachers for students, but also as a means of searching for educational information by practitioners and professionals during the COVID-19 pandemic. Apart from that, podcasts are also a means of in-depth discussion regarding the future of distance learning as part of the educational transformation after the COVID-19 pandemic. Research related to the use of podcasts was carried out using several methods, such as surveys, experiments, and literature searches. Podcasts are used in various fields of science such as microbiology, medicine, entrepreneurship, and English.

Podcasts have been widely chosen as a learning medium during the pandemic because they are easy to use, flexible, have low production costs for teachers, can be listened to anywhere and anytime by students, and can be a means of conveying detailed and personalized information with a tone of voice and intonation. Even though audio-visual based media is intensively used as a learning medium, audio-only podcasts are still the most frequently used learning method of choice. (Reynard et al, 2021; Vidal et al, 2020). Even though there is a lot of controversy regarding the effectiveness of distance learning using audio-based technology, namely podcasts, its benefits as both a main and complementary learning tool are proven by these nine studies. With audio-based learning, students can develop critical thinking and increase learning participation because they can overcome boredom when doing distance learning (Boury et al, 2021; Fox et al, 2021).

The findings obtained from these nine journals are in line with the situation occurring in Indonesia, where podcasts were also chosen as an alternative technology-based learning media for distance learning during the COVID-19 pandemic. Podcast, or the official equivalent in Indonesian is *podcast*, is widely used as part of learning in secondary schools and universities. By focusing on students' pedagogical abilities, namely listening, podcasts are widely applied in the fields of social sciences, languages, and quite a few natural and health sciences also use podcasts. In secondary school education, students who were given distance learning material via podcast felt they understood the material provided, liked the learning method by listening, and felt that podcasts were easy to use as a learning medium (Sugatri, 2021). By using pre and post-test evaluation techniques, it was found that there was a relationship between the learning model using podcasts and the effectiveness of learning in the fields of language science and editorial text writing (Winata&Logita, 2022).

5. Conclusion

Distance learning became inevitable during the COVID-19 pandemic due to restrictions on community activities by the government. One of the sectors most affected is education, where teachers and students need to get used to a form of distance learning that was rarely applied before the pandemic. Podcasts have become an alternative technology-based distance learning media in secondary schools and universities, as well as a source of information for practitioners and professionals. Podcasts can be used as a main learning source or as a complementary learning source, by adding other learning materials such as text, video, and report formats. Podcasts can be used not only in one field of science, but in various fields of science, such as medicine, biology, language, social sciences, and others. Podcasts were chosen because of the various advantages they offer, starting from flexibility, ease of access, affordable production costs, can be listened to anywhere and at any time, as well as highlighting personalization of learning through tone of voice and intonation, providing more detailed information in the form of narration, and material-material that cannot be conveyed well through writing alone or in face-to-face meetings.

6. Future Scope

Even though the involvement of technology in distance learning is inevitable in the pandemic era, there is still much debate about whether distance learning via podcasts is truly effective and provides the same benefits as face-to-face learning. Several things are taken into consideration, namely the level of student participation, the variety of teaching materials delivered, sensitive issues such as the validity of information sources, plagiarism, and other ethical issues, as well as the students' ability to really understand and listen carefully to the learning material delivered via podcast. The use of podcasts needs to be accompanied by other complementary teaching materials in order to maximize learning objectives and the material provided to students. Apart from that, it is necessary to implement a monitoring and evaluation mechanism for the use of podcasts so that their effectiveness for distance learning can be measured.

The researcher's suggestion is that further research needs to be carried out regarding the criteria for the effectiveness of using podcasts in distance learning and learning evaluations specifically designed for learning using podcasts.

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