Audio-Visual Learning in Secondary School: A Review of Advantages and Challenges in Education

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ABSTRACT

The Industrial Revolution 4.0 (IR) is an impetus for the use of more advance technology in the education setting. Alongside the changes taking place because of it, teachers too need to evolve. As the main player of any teaching and learning session (PdP), their role is not only to modify students' behaviour but also actualise educational goals. Both of which can be helped with the use of technology-based materials and mediums. Audio media is a media in the form of sound that requires listening abilities, whereas visual media is materials in the form of images or pictures that do not require listening skills but do require viewing skills. The selection of one of these media as a learning medium results in one-way and ineffective listening. On the other hand, audio-visual media is an intermediary media which combines seeing and listening skills that help students acquire knowledge, skills, and attitudes to achieve learning goals. Therefore, this paper will look at the literature review on the potential of audio-visual material-assisted learning in education and explore its advantages and challenges at secondary school level. The review demonstrates the advantages of implementing audio-visual materials in multiple fields of education. Using Boolean search techniques, a literature search was produced from numerous databases while searching for terms related to audio-visual teaching and learning. This study reviewed ten research papers from 2018 to 2022 using a systematic analytical approach to produce a comprehensive analysis based on specific criteria.This study summarizes the advantages and challenges of learning with the help of audio-visual materials. It is reported that the use of audio-visual materials helps to increase students' motivation, ensure students' active participation, engage students' attention, create better learning atmosphere, increase teacher innovation and creativity, and ultimately resulted in increase of learning delivery effectiveness. However, it doesn't come without a challenge. Preparing such materials is time-consuming, costly and requires high technical skills which affects teachers' motivation. As such, this paper can help educators see how the application of audio-visual materials in the educational world benefits students. In addition, educators can also identify challenges or constraints that need to be paid attention to if this material is to be used in PdP in the future.

Keywords
Audio-visual; secondary school; advantages; challenges; education

Introduction

IR 4.0 contributes to positive development in the 21st century education model. Technology, which is rapidly developing has entered the digital era, where all disciplines, including education, employ technology to facilitate work. Education technology is a systematic process and it includes the environment, humans, tools and systems, which encompasses organisation, procedures and ideas (Salsabila et al. (2020). According to Ibe & Abamuche (2019), it is a necessity for us to follow the developments of science and technology that has become a part of the living environment and culture of the world.

Modern technological changes have attracted the interest of generation z and alpha, the digital multi-tasker generation who are always ready to accept changes in the cyber world which are hoped to be applied at school (Lase, 2022). In order to produce more effective results, the educational environment for this globalized generation needs to be created in accordance with the skills, needs, and knowledge that are already in existence (Nicolaou et al., 2019). If the teacher-centered method is used indefinitely, it is feared that students' cognitive development will have less of a positive effect on knowledge mastery because today's students have been exposed to the use of gadgets and information technology (Nur Fatin Shamimi, Nur Farahkhanna, Mohd Ra'in, 2021).

According to Faujiah et al., (2022), learning materials in the form of audio, which is a one-way communication, has its own limitations when utilising spoken language or media sources such as radio or voice recording, and a person can only understand it if they have good hearing. Visual media, such as textual documents, diagrams, photos, and visuals that depict information content, cannot be heard and require strong vision. Despite the use of various visual media in learning, the most fundamental flaw is that it is totally controlled by educators, restricting student participation and activation (Nicolaou et al., 2019). Learning media used must follow the advancement of science and technology so that the delivery of learning can be done properly and efficiently and learning outcomes can be improved (Pahmi et al., 2022). Therefore, the selection of learning materials such as audio and video materials are important so that PdP stays abreast with the current development in education, which is more focused on the use of technology in education.

Previous academics have conducted substantial reviews to investigate audio-visual learning in schooling. However, most researchers focus on the use of audio-visual materials in higher education, and there is currently a scarcity of studies on the use of audio-visuals in secondary school. Hence, the purpose of this study is to present a review of the potential of audio-visual material-assisted learning in education and to investigate its advantages and drawbacks at the secondary school level.

Defining Audio-Visual Learning

Audio-visual media, according to Andrew Fernando, Dewa Putu (2020), is a medium that combines audio and visual media, using the senses of sight and hearing as mediators in the transmission of information. This is supported by Dewi, Hudiyono, and Mulawarman (2018) who states that audio-visual media involves listening and viewing processes used in learning activities such as movies, videos, television programmes and sound slides. These audio-visual media are a tool in the form of sound effects (audio) and images (visual) produced in a play through various digital applications. Moreover, they are not completely dependent on the understanding of words (Riyanto & Asmara, 2018).

Audio-visual learning material is essential as a visual and auditory tool that is conducted simultaneously and allows for interactive, entertaining and effective teaching (Et.al, 2021). As Rahmatullah et al. (2020) said, audio-visual enriches the learning environment, promotes learning, exploration and discovery while encourages students to speak and generates their thoughts. Not only that messages from an audio-visual can be clearly conveyed both orally and in writing without limiting space, time and meaning. Students are also able to assess their weaknesses and strengths because there is a sense of curiosity about optimal learning goals (Mohammed et al., 2021). Information communication technology (ICT) which integrates with audio-visual technology can be a tool for disseminating digital media literacy and is a comprehensive mode of content delivery to generate better knowledge (Nicolaou et al., 2019).

Significance Advantages of Learning with the Help of Audio-Visual Materials

Teaching and learning using audio-visual material has many advantages, as the literature from recent studies shows. Table 1 summarises the added value of audio-visual learning based on literature studies in the field of education.

Table 1. Common Advantages of Audio-Visual Learning in Education

Author/s	Advantages of Audio-Visual Learning
Mohammed et al. (2021)	Inspire students to learn
Rahmatullah et al. (2020)	Arouse students' attention to study
Pahmi et al.(2022)	Arouse curiosity about the material being taught
Raudatussolihah (2022)	Improve students' understanding
Novika (2021)	Improves students' learning outcomes.
Pahmi et al. (2022)	Students seem to be more active in giving feedback

Table 1 shows the advantages of audio-visual material for the teaching and learning process. Several studies on the use of audio-visual learning materials are being conducted extensively in the education world from primary to tertiary level. However, this study focuses on studies at the secondary level in a wide range of subjects.

Methodology

This paper reviews research studies on the use of audio-visual materials in various subjects at the secondary school level. The objective of this research is to explore the potential of audio-visual learning materials as a tool for teaching and learning and explore its advantages and challenges at the secondary school level. For the study, scholarly works published between 2018 and 2022 were examined. The literature search was conducted through electronic databases, namely *IEEE, ScienceDirect, Springer Link* and *Google Scholar* using Boolean search techniques. Some keywords were used in the literature search, such as "audiovisual", "audiovisual AND secondary school" and "audiovisual AND secondary school AND education". Certain keywords are not included, such as primary school, audio-visual material or media and industry. There were 108 hits in the keyword search in the ScienceDirect database, 138 hits in Springer Link, 373 hits in the keyword search in IEEEXplore and 404 hits in Google Scholar. However, only ten papers were selected according to certain criteria. First, the year in which the study was conducted was selected, i.e., from 2018 to 2022. Second, the teaching must involve the use of audio-visual in secondary school. Third, it must be a study to determine the potential of audio-visual learning materials in various educational settings at secondary school level. Finally, it must include a comprehensive discussion on the impact of audio-visual learning materials which includes the purpose and benefits of using audio-visual at the high school level.

It is typical to have difficulties while implementing something new, including difficulties with learning audio-visual content. Therefore, it is pertinent for this paper to study this aspect of audio-visual learning. Again the Boolean search technique was used by using the keywords "challenge AND audiovisual" in searching for related material. The studies selected for this part of the review were conducted between the years of 2018 to 2022.

Findings

This section briefly explains the findings of the review. The findings are related to the review of the benefits and challenges of using audio-visual learning materials. 10 articles were selected and the papers were reviewed in the subtopics below.

Advantages of the Audio-Visual Leaning in Education

There is a lot of research that looks at the use of multimedia in learning. The benefits of using audio-visual learning materials are listed based on literature reviews. In Table 2, you will find the latest research findings carried out locally and from abroad on teaching and learning approaches using audio-visual materials.

Table 2 The Review of Audio-Visual Learning in Education: Types and Advantages

Author/s	Purpose of Audio-Visual Learning	Multimedia Type	Advantages
Dewi et al. (2018)	Create and explore a complex text procedure based on a discovery learning model using audio-visual media	• Video	• The results of the study show that audio-visual teaching material motivates more learning and improves learning outcomes.
Rahmatullah et al. (2020)	Develope audio-visual learning media using Canva	• Video from Canva	• The use of attractive media increases students' attention to learn. • In order to facilitate the implementation of learning processes both online and offline, the utilisation of visual

			and aural media is essential.
Ibe and Abamuche (2019)	Study the differences between traditional learning methods and technological adaptation	• Video, YouTube	• Students who were taught utilising visual and auditory materials outperformed those who were taught using traditional techniques.
Indrawati et al. (2022)	Study the effectiveness of audio-visual hands-on learning in vocational secondary schools	• Learning videos, dialog recording, narration audio, sound effect, incoming mail video, and outgoing mail	• According to study findings, audio-visual based practical learning enhances students' learning results.
Akinoso (2018)	Study the effectiveness of multimedia on the meaning of students' achievement	• Computer, calculator, microphone, speaker and CD-ROMS	• Study finds students were active in the learning process • The use of multimedia enhances mathematics learning • The attitude, motivation, and focus of pupils towards learning are positively impacted by the usage of multimedia and technology.
Adigun, Badmus, Mohammed (2020)	Study the impact of integrating a video instructional package on students' achievement	• Video instructional package on force, motion, and friction	• The performance of students using the Video Instruction Package demonstrates a substantial difference in achievement compared to conventional teaching and learning session/media.
Olansehinde (2018)	The impact of video-based instructional strategies on students' achievement	• Video	• The findings of the study demonstrated that cell division video media teaching techniques have a favourable effect on students' responses. • According to studies, learning is made more engaging by using video media.
Oyewale et al., (2021)	Analyse the integration between education and the use of technology	• Computer, projector, internet, and audio-visual video	• Students who have been impacted by the use of technology in the teaching of History exhibit high levels of autonomy and experience more pleasure in learning.
Onyinyechi (2020)	Analyse in detail the use of effective teaching and learning materials	• Television, video, films, slides, motion picture	• The use of multimedia materials has a positive impact on teaching and learning.
(Abubakar et al., 2018)	Examine teachers' perspectives on the use of visual audio materials in teaching and learning.	• Projector, Power Point	• Visual and aural learning aids encourage learning and enhance students' comprehension. • Facilitates the teaching process for teachers to explain more difficult topics

Table 2 shows that overall, researchers support visual and auditory learning to improve student understanding, achievement and performance. Dewi et al., Akinoso, Olansehinde, (2018) and Oyewale et al., (2021) agreed that audio-visual learning generated high levels of motivation and satisfaction among students. In addition, researchers

also found that audio-visual learning can stimulate students to learn (Rahmatullah et al., 2020) (Olansehinde, 2018). Not only that, this learning also supports online learning (Rahmatullah et al., 2020). Oyewale et al., (2021) and Abubakar et al., (2018) also formulated that this audio-visual learning can ease the task of teachers in teaching some difficult subjects and replace traditional teacher-centred learning while improving the effectiveness of teaching quality. Therefore, due attention needs to be paid to the use of technology in education to ensure that the aspirations of learning in the 21st century are not compromised.

The use of technology is indeed capable of shaping the teaching methods of educators, the way students learn and the management system of institutions (Widianto, 2021). Learning that utilizes the use of audio-visual media is better when compared to conventional media (Isna Nadifah Nur Fauziah et al., 2023). This is also supported by Mukaramah et al., (2020) who stated that the learning model based on audiovisual technology is able to have a greater impact especially on reading and listening skills in addition to increasing student motivation and more student-centered learning. Learning using audio-visuals also makes learning more conducive, lightens teacher's task and speeds up student's understanding process (Paisar, 2021). Not only that, the use of audio-visual media online is able to attract students' attention because it creates a more enjoyable teaching and learning atmosphere (Rahmi & Alfurqan, 2021). Therefore, the use of technology in education needs to be given due attention to ensure that the learning goals of the 21st century are achieved.

Challenges of the Audio-Visual Learning

From another perspective, there are also challenges and obstacles in enabling audio-visual learning. As Mwale (2018) stated, audio-visual learning materials in the teaching of history are difficult to provide due to the lack of clear image sources to illustrate past events. Oyewale, (2021) also explained that among the challenges towards integrating technology in learning are insufficient preparation time, lack of technology resources, low level of confidence and competence of teachers in the use of ICT, lack of technical support, tools, and lack of motivation. There are some teachers who are less literate in the use of technology, especially among older teachers (Widianto, 2021). They consider the demands for the application of technology in education to be a burden because they are more comfortable using traditional ways or methods (Mohd Amirul Bashah, 2022) (Widianto, 2021).

Yahya & Othman, (2022) in their study said that the use of audio-visual materials also requires careful preparation so that the content of the learning to be delivered well. Equipment for screening is also a hassle to prepare with teachers needing to have a phone or laptop, cable, a stable internet network and a projection screen or television (Paisar, 2021). In addition, the limited financial resources to increase the incentive for teachers to use audio-visual tools and purchase modern equipment is the reason why audio-visual teaching aids are less used (Akhmetshin et al., 2019). Among other challenges presented is that there are some students who chat and are sleepy during the screening because the screening is carried out at noon when students are likely to be already tired (Paisar, 2021).

Recommendations for Future Studies

Considering the problems faced in the implementation of ICT by teachers and the lack of motivation to do it, it would be appropriate for the school or the ministry to take some initiatives. Shanmugam & Balakrishnan, (2019) of the opinion that proper training, motivation, and incentives need to be given to teachers to enable them to effectively integrate ICT resources in the classroom. Although some teachers feel a burden in the use of technology, but as a teacher educator, it is necessary to find alternatives in improving knowledge and understanding in technology in order to create a more effective learning environment (Razila Kasmin et al., 2019).

The problem surrounding time also needs to be given attention as time allocation for every subject has been set in guidelines by the Ministry of Education. Thus, teachers' attitude towards time management with ICT should be changed by finding ways to collaborate among teachers through various email applications, WhatsApp and Telegram in the delivery of ICT-based ABM materials (Shanmugam & Balakrishnan, 2019). The problem of low confidence and the level of competence of teachers in the use of ICT is not an obstacle because there are groups of teachers who specialize in the use of e-learning such as *CikgooTube, Telegram groups, Google Classroom Malaysia, Facebook Teachers Library and Media* who are ready to help fellow teachers if needed (Mohd Nawi, 2020).

The problem of funding to purchase technological equipment also needs to be addressed as best as possible. Jain Chee et al. (2018) stated that Ministry of Education (MOE) should prioritise the need to integrate technology into teaching by providing technology-related infrastructure with supplements that enable and facilitate teachers to implement technology-based teaching. This is supported by Mohd Nor et al.(2019) who stated that this situation requires support from the government in channelling allocations to provide the hardware and software needed by 21st century teachers

The occurances of students sleeping and chatting during the process of showing audio-visual materials also needs attention because it shows that student can get bored even when audio-visual materials is used during the learning process. Therefore, teachers need to try to attract students' interest in audio-visual learning by providing games or quizzes after the screening process (Widianto, 2021). The learning process becomes more active when interactive quizzes are provided by the teacher because students are more motivated and show positive competition (Andrini & Pratama, 2021). The preparation of audio-visual materials in the form of animations, films, reality shows, quizzes can play a role in attracting students' attention in addition to selecting the ideal video duration, which is within a period of 6 to 10 minutes (Mega et al., 2020).

Conclusion

Overall, the review of researches chosen shows that the use of visual and auditory learning tools in the secondary classroom has the potential to grow. The use of visual and auditory materials has been shown to be beneficial to both students and teachers. If these audio-visual learning tools can improve students' comprehension, achievement, and performance, provide high motivation and enjoyment of learning, and encourage students to learn, it is important that we expose students to the benefits of audio-visual learning. The benefits for teachers are obvious as audio-visual learning material makes it easier for them to explain some difficult concepts and can take the place of traditional teacher-centred learning to student-centred while improving the efficiency of teaching.

Nevertheless, there are some challenges and obstacles in this audio-visual learning, such as lack of time, lack of technological resources, low confidence and competence level in teachers to use ICT, limited technological tools, low motivation and inadequate fund and the problem of students' boredom. Therefore, the steps to address this problem need to be detailed out. Among the steps to be taken are providing proper training, motivation, and encouragement for teachers. In addition, teachers' attitudes towards time management with ICT need to be changed by finding ways for teachers to collaborate, and MOE needs to provide additional technological infrastructure to enable and facilitate teachers to deliver technology-enhanced lessons. All these challenges need to be addressed to enable the use of audio-visual learning in education, especially at the secondary school level.

In conclusion, further research on the use of audio-visual materials in teaching and learning, needs to be continued so it can be improved and be of benefits for teachers and students in the near future. Moreover, by doing so, learning environment based on technology can be integrated into a variety of areas of teaching and learning through the use of visual audio materials.

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