Teaching and Learning with Instructional Videos: Issues and Concerns for Educational Practice

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Abstract

The prominence of video-based learning in modern educational practice is constantly motivating teachers to incorporate instructional strategies such as images, sounds, and graphical representations into their teaching and learning process. Yet, many educators could still be affiliated with the conventional learning model where classroom instructions are delivered in a traditional mechanistic pedagogical technique with lessons delivered mostly through speech. To attain effective learning outcomes in terms of students' achievement and engagement in the learning process, educators must consistently interact with instructional strategies such as videos. The goal of this study was to discuss the application of instructional videos in teaching and learning and to identify and address some of the issues and concerns teachers and students may have relating to learning with videos. Some Issues and concerns relating to instructional video production and use were identified and discussed. While some recommendations were offered, including the need for teachers to introduce collaborative video production and pedagogical approaches that foster video-based learning in the classroom.
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Keywords: *Video-based learning, instructional videos, pedagogy, digital technology*

Introduction

The advent of video expands the possibilities of learning beyond specific locations and time. (Chew et al, 2008; Carmichael et al, 2018). Video-based learning is a mode of learning which does not demand learners to be in a specific location of study. This makes educational content (such as concepts and ideas) available for learning all day and may be tailored to match the needs of individual students. As a result, videos can be regarded as a basis for technology-assisted learning.

Technology-assisted learning has become prevalent in all spheres of life. Over the last two decades, the use of information and communication technology (ICT) has profoundly altered the systems and ways of practically every type of human endeavor including business and governance (Ghavifekr et al, 2016). This alteration is not without its effect in the field of education. This is particularly because the teaching and learning process as a form of activity is vastly socially oriented (Kinash et al, 2015). Hence, 'quality' education has conventionally been linked with highly motivated instructors who dedicate a lot of one-on-one time with students.

The relevance of technology-based learning in education is growing as the world moves toward electronic media and technology, and its prominence is constantly increasing and developing in the twenty-first century. An intriguing aspect of technology-assisted learning is that it allows for more student-centered educational experiences (Manlunas, 2006). Before the advent of this learning mode, the traditional mode of learning has gained prevalence in most educational practices. In this situation, the teacher offers facts as instructions, while pupils learn by memorizing and recitation, making them passive participants in their learning process. However, in recent years, the teaching and learning approach has expanded to include active learning methods (such as inquiry-based learning) that combine instructional strategies such as pictures, sounds, and graphical representations into the teaching and learning process. While some educators may still be attached to the conventional learning mode, these technology-based solutions often work in tandem with either learning approach (Hameed et al, 2008; Norton, & Hathaway, 2010; Carmichael et al, 2018). Educators should regularly engage with instructional strategies such as videos to achieve effective learning outcomes in terms of students' achievement and engagement in the learning process.

The use of instructional videos in modern educational practice has become well-known in recent years through numerous techniques (such as research publications). Despite widespread awareness of its use and benefits, research show that videos are still underutilized in educational settings (Herron et al, 2000; Bawa et al, 2019). Additionally, while several studies have empirically explored the use of instructional videos in classrooms and learning centers (Bristow et al, 2014; Apagu & Bala, 2015; Bawa et al, 2019), studies that critically investigated concerns relating to its application in educational spheres are surprisingly limited.

This study aims to discuss the application of instructional videos in teaching and learning and to identify and address some of the issues and concerns teachers and students may have relating to learning with videos. This study is not meant to discuss the practical steps that have to do with the production of instructional videos (for instance, recording, editing, and audio effects), instead, to discuss from applied views the application of videos in pedagogy, identify some issues that relate to its application, and further develop strategies teachers can use to identify, develop and improve on their integration and usage of instructional video in teaching environments. It is hoped that this review will help stakeholders (such as teachers, instructional developers, and students) understand and identify the benefits which instructional videos offer, and how these benefits can be maximized to achieve improved learning outcomes. The term "video-based learning" is used in this study to refer to all types of learning that employ video as an instructional tool.

2.0 the Concept Of Video-Based Learning

Videos have proven to be an effective technical tool for delivering knowledge to a learner or group of learners. With the use of videos, instantaneous access (which could otherwise be limited) is made available to learners (Beaudin, & Quick, 1996; Herron et al, 2000; Norton, & Hathaway, 2010). Closely related to this is the concept of video-based learning. The learning environment must be sufficiently favorable and resource-rich to provide learners with the essential learning experiences to attain the targeted learning outcomes (Carmichael et al, 2018). Video is one of the resources that allow for this learning outcome.

Video-based learning is a method of knowledge acquisition through which videos are displayed in electronic means. When learners study with the help of videos, they are said to be engaged in video-based learning (Giannakos, 2013; Joshi, 2021). To emphasize the interrelationship which exists between these two concepts, Hemmer (2021, p.1) described video-based learning as a form of 'learning experiences facilitated through video'.

When information is conveyed visually, the human mind is better able to remember it (Carmichael et al, 2018). As a result, video-based learning is proving to be a suitable tool for learning, with higher results than traditional learning methods. By using different media avenues, such as models, audio-visuals, audios, and presentational tools, a friendly learning environment and experience will be enabled for learners to promote knowledge acquisition. In most schools, facilities such as the TV set, DVD and most commonly the computer are widely available to display videos for learners. Whereas other instructional learning facilities such as projectors, interactive boards, and filmstrips are rarely available (Dias et al, 2011; Apagu & Bala, 2015). Another viable source of accessing instructional videos for classroom learning is the use of the internet. Classrooms were connected to the internet as far back as the 2000s, allowing for interactive digital video and video conferences (Carmichael et al, 2018). Since then, new technology like smartphones and tablets, together with social media like YouTube, have increased social engagement and made it easier than ever to integrate video applications into teaching and learning.

Videos promote learner retention by engaging them via many senses; they enable microlearning by allowing learners to create short videos that are entertaining; and they allow for on-demand learning by allowing learners to visit certain portions of a subject through videos. Instructional videos are beneficial in learning, including their ability to engage learners to facilitate academic achievement.

2.1 Applications Of Instructional Videos For Teaching And Learning

The wide adoption and use of instructional strategies impact the approach by which learning takes place in classrooms. Although learning has traditionally been observed as being delivered in a didactic form, where teachers/ expert instructor provides a set of learners with lots of facts and learners memorizes the information passed across to them in such process (Unal, & Unal, 2017), this processing problem is one of the key essences of the constructivist learning theory, postulated by Vygotsky (1978). This theory postulates that for learning to take place, learners must be actively engaged in the learning process. That is, learners must construct knowledge in the process of learning. Closely related to this concept is the concept of scaffolding, where an expert, a 'more knowledgeable other' (such as teachers and parents) or tools (such as audio-visual learning materials and the internet) are incorporated in learning to enable learners to progress from what they already know to what they could learn under the guidance of such help (Vygotsky, 1978). In this regard, instructional videos serve as a key tool capable of 'scaffolding' learning in the classroom. Thus, this finding resonates with the notion by Mayer (2014, p.47) that 'students learn more deeply from words and pictures than from words alone.

The use of video-based learning as an instructional strategy has found applications in various learning systems, subjects, and segments, ranging from theory-based courses to practical ones. Carmichael et al (2018) aver that video 'provides great benefits to teachers and learners, stimulating stronger course performance in many contexts, and affecting student motivations, confidence and attitudes positively.' (p.5). For instance, instructional videos serve as a viable tool to learn language and culture. In a study by Herron et al (2000), an investigation was carried out to check whether students enrolled in foreign language lessons learn cultural information which was incorporated in videos. The study recruited fifty French students who viewed eight instructional videos as part of their multimedia-based curriculum for fifteen weeks, throughout a semester. Findings from this study indicate that students' overall gain in cultural knowledge was significantly high.

Additionally, practical and vocational courses can be delivered using videos. Studies by Bawa et al (2019) investigated the adoption of instructional videos for teaching and learning safety precautions in vocational schools. Here, the use of instructional videos was viewed as a step-by-step guide on how to minimize (and eventually control) health hazards associated with the handling of practical tools and machines in the workshop. By using videos to communicate safety practice, it was found out that although videos were hardly incorporated in teaching practical concepts in workshops, they have a powerful impact on students' retention and engagement with vocational information. In this case, users of instructional videos during hands-on practical classes are capable of managing workshops equipment more efficiently, as the application of ideas gained through the videos is key to minimizing accidents or damages to equipment, whilst minimizing time and maximizing energy or resources. Notably, users of video-based instructional materials 'are more likely to spend relatively less time performing specific tasks during practical lessons' (Bawa et al, 2019, p.10).

Instructional videos can also be used to teach subject-based courses including key theories and concepts. Studies by Bristow et al (2014) investigated how videos can be used to teach engineering mechanics concepts to junior level students and results were obtained. It was found out that the techniques used in presenting this video were appealing to students and were regarded as being an effective learning tool, irrespective of students' prior knowledge of such concepts. These applications are also found in various disciplines such as mathematics (Maher et al, 2014), and medical education (Taslibeyaz et al., 2017).

The application of video-based learning is not limited to practical courses and concepts learning, it also finds its applications in both in-person and online learning modes (Oberne, 2017). Hence, deductions from these reviews show that watching instructional videos helps to enhance students learning motivation and interest, promote social learning atmosphere, encourage engagement with learning content, build cognitive learning and knowledge retention, improve students' academic attainment achievement, whilst ultimately increasing access to good quality education.

3.0 Issues And Concerns Of Using Instructional Videos For Teaching And Learning

Because technology-enhanced learning is continuously changing, the various aspects that influence the continuing use of instructional video may necessitate a unique approach to its operation at any given time. Identifying

these approaches would be pivotal to determining the learning outcomes in classrooms.

Production demands: Videos are characterized by elongated lifespan and can serve many learners at a time (Carmichael, 2018). This feature allows videos to help with duties that would otherwise be considered a burden for the teacher. A fascinating feature of the video is that the concepts and information presented through the movie are consistent, and students learn the same principles throughout, which would have been slightly different if taught by different teachers. However, video production verve through developmental stages of shooting, editing, formatting, and rendering before actual video file format (such as MPEG, MP4, or MKV file) is produced. As a result, the expense of making films, as well as the procedure involved, such as video access, internet use, and price, can be astounding.

Storage and Accessibility: Having established that one of the benefits of using instructional videos for learning is that it provides learners with unlimited access to information, videos generated for lectures or through lectures can be stored on websites or CDs. However, in most cases, once a video has been developed and exported, it may be uneasy (or demanding) for information recorded on such videos to be changed (van der Meij & van der Meij, 2013). For updates on particular information, a new video would be needed for use. These would (in most cases) require the same production process as the previous video. In addition to this, learning with instructional videos require technological devices to access, whereas the availability of such devices varies from school to school. However, a limited electricity supply is a major constraint to learning with videos, particularly in some African countries (Apagu & Bala, 2015; Bawa et al, 2019).

Technology skills: The use of videos in learning identifies the roles of teachers beyond classroom facilitators to include supporter, collaborator, technician, and visual communication designer (DeMonte, 2013). Since the selection of learning approaches solely depends on the teachers, the need for teachers to be provided with opportunities to learn and be equipped with video production and management skills becomes more essential than ever. Why is technology skill needed? video-based learning placed a vital demand on teachers on the need to learn new skills to meet the needs of the twenty-first-century technology-enhanced teaching and learning process.

Student Engagement: As Carmichael et al (2018) indicated, educational videos serve as a means of improving social interaction during class lessons. These interactions tend to occur when Students watch videos as sub-groups within a class or as a class, either as an independent learning group or being facilitated by the teacher. These videos can be made accessible to students through DVD display or using online educational content on platforms such as YouTube. In addition to this, social interactions stem from peer discussions before, during, or (in most cases) after watching videos together as a group. However, the availability of online video instructions can likely affect student-teacher engagement in class and in-person teaching in some ways (Kinash et al., 2015).

For instance, while instructional videos foster students' convergence, it also serves as an avenue for students to learn on their own. It is noteworthy to identify that individualized learning with instructional videos enables students to learn at their own pace, particularly in situations where students watch and rewatch videos repeatedly till they get the information being passed across. On the other side, learning through videos could limit students' social learning experience as a result of students being isolated from their peers. These can in turn impede their social, physical, and mental development (Buchner, 2018). Hence, there is a need for teachers to ensure videos facilitate social learning among students and not otherwise.

4.0 Strategies For Using Instructional Video In Teaching And Learning

As video-based learning becomes widely adopted, the need to ensure its adequacy for learning remains vital. The knowledge of handling videos alongside various pedagogical approaches would be beneficial for educational practice.

Collaborative video production approach: Technology has grown more accessible and available as a result of the growing popularity of social media; similarly, information and technology control is user-driven. (Carmichael et al, 2018; Buchner, 2018). Teachers are encouraged to develop their own instructional videos in order to reduce production costs and increase access to instructional videos. These include considering the three characteristics that are critical to improving learners' experiences with created videos: cognitive load, which is the context of learning, non-cognitive factors like engagement and emotive domain, and active learning factors like projects and teamwork. (Brame, 2015).

Creating a video-based support approach for learning by teachers require that instructional videos should have explicit aims, with a simple and short length of time to minimize boredom, reduced use of texts to sustain interest, leading to elaborate use of graphics and animated

characters, captions, and voiceovers (Kapoor, 2015; Beheshti et al, 2018). Following these guidelines, training regarding video-based learning should be emphasized at teacher training and professional development centers.

Pedagogical strategy: As technology-assisted learning such as videos becomes more accessible, the need to incorporate pedagogical strategies (such as cooperative learning, problem-based learning, and inquiry-based learning) into the teaching and learning process increases more than ever. Teachers are encouraged to add various pedagogy forms into their practice to enable them to use videos to engage students in active learning.

Cooperative learning: students come together to participate in a form of learning activity (such as group projects or essays). Here, students interact and support the learning process through videos (Manlunas, 2006).

Flipped classroom: the classroom activities are carried out outside the class using a technological source such as videos, while outside activities such as home assignments and interactions are done in the classroom (Tawfik & Lilly, 2015).

Blended Learning: learning takes place by combining two or more learning approaches. For instance, outdoor learning with video-based learning, and online learning with face-to-face learning. Most students prefer this learning approach to other pedagogical approaches owing to its 'blended' nature (Chew et al, 2008; Kinash et al., 2015; Carmichael et al, 2018).

Since learning is a process and learners must be engaged in their learning (Vygotsky, 1978; Myers, 2014), some of these approaches can be used to encourage video-based learning in the classroom.

Conclusion

The role of videos as a form of learning has become prevalent, and this importance steadily increases and progresses in the twenty-first-century educational practice. Videos can combine multimedia elements such as audio, graphics, texts, and images to engage different senses while learning. The use of videos (particularly with graphics/visuals) makes a significant difference in students' assessments of their likely learning performance, their attention, interest, and engagement levels, and their eventual learning performance.

Owing to the benefits of video-based learning in pedagogy as well as in the future of education, identifying the possible challenges to fitting in this form of technology-enhanced learning in schools would be a vital step in improving the quality of teaching and learning (Ghavifekr et al, 2016). Following this line of reasoning, this study provided some insights into the benefits of instructional videos in pedagogy and emphasized some concerns teachers and students may have in their learning using instructional videos.

Although the use of video has proven to be beneficial to the teaching and learning process, instructional videos should be seen as an enhancement to classroom instructions, rather than being a replacement to them (Bristow et al, 2014). It would be fair to say that with the effective application of instructional videos, both educators and students will be better positioned to achieve effective teaching and learning outcomes in different spheres of learning.

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