INTEGRATING "TALKING IMAGES" IN EDUCATION: A CASE STUDY

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Abstract
The era of innovation in education is well underway. Effective practices demonstrate the power of technology in motivating students and improving learning outcomes. This paper examines the integration of the talking image, a new and innovative technology, into the educational process through a case study. It also sets out the methodology and the educational benefits resulting from its use. This technology combines visual and auditory elements and is an effective tool for language education, suitable for students with learning difficulties. It can be applied in various educational contexts, from science and mathematics to art, and can enrich a simple narrative or provide personalized content. This paper is a significant contribution to the field, serving as a valuable resource for educators interested in integrating cutting-edge technologies into their pedagogical practices. New research in this direction should be done on the pedagogical use of talking pictures in education and the new frameworks for their integration.

Keywords

İnnovation,

Talking Images,

Education,

Multimedia,

Didactic.

1. Introduction

It is undeniable that we are witnessing the peak of educational technology. As traditional tools such as slide projectors and interactive whiteboards are phased out, they are being replaced by more advanced digital alternatives. This shift signifies that educational technology is at its pinnacle. The question of whether technology can transform teaching is complex, but the answer is clear: it can. Teachers can implement innovative strategies and engage students in their everyday lives through the use of technology in the classroom (Matthias, 2015). However, this potential is only realized when technology is used creatively and imaginatively. It is important to note that technology is not a methodology in itself (Armstrong & Yetter -Vassot, 1994). Rather, it is a catalyst for introducing innovative pedagogical approaches (Armstrong & Yetter-Vassot, 1994). To prepare for this reality, future teachers must be trained in integrating technology and community resources into cultural integration and instruction if they are to be successful in their careers. Educators must gain proficiency i n programs such as PowerPoint, Photoshop, iTunes, GarageBand, Audacity, iMovie, and Final Cut to develop a comprehensive skill set. With these skills, teachers can develop innovative classroom approaches and projects that facilitate the development of digital literacy among students (Matthias, 2015).

Multimedia tools have attracted considerable attention in educational settings due to their ability to transform traditional learning environments into interactive and inclusive learning environments. In recent years,

multimedia technology has significantly improved the quality of education across institutional levels (Peconio, di Furia, Limone, & Fornasari, 2023). The integration of multimedia technology into professional training and learning outcomes has been proven to result in a positive correlation (Rahmawati & Ramadan, 2021; Wu, 2024). Educational processes today require a variety of multimedia technologies, including digital presentations, online resources, videos, audios, webinars, video conferencing, and e-learning platforms.

An illustrative example of this transformation is the use of talking images. These images combine visual and audio elements to provide dynamic educational content. Images can significantly influence perception. The way images are used and positioned strategically can have a profound impact on how we perceive a subject (Camillini, Barison, Gigliotti, 2022). The incorporation of talking images into education marks a significant advance in technology. These images enhance multimodal learning and create a more engaging and richer learning environment by enriching and enhancing the multimodal learning process. These images combine visual content with audio explanations to meet the different needs and preferences of learners. They provide both visuals and audio explanations simultaneously.

Educational theories such as constructivism and cognitive load unequivocally support multimedia education. The constructivist approach supports that learners should construct knowledge actively, rather than receiving it passively. Multimedia, through its interactive and varied formats, enhances this active learning process (Mayer, 2014; Jonassen, 1991). Cognitive load theory also states that when information is presented visually and verbally as combination, the human brain processes it more efficiently. Managing intrinsic and extraneous cognitive loads is essential to maximize learning (Sweller et al., 2019; Plass, Moreno, & Brünken, 2010).

As a form of multimedia integration in education, this matches nicely with constructivist principles and also addresses concerns regarding cognitive load (here mediated because the student does not need to read) by allowing information to be presented through two channels — visual and auditory. In conclusion, it is vital to have this dual approach for an effective learning. The implementation of Artificial Intelligence (AI) in multimedia education could improve students' attention and motivation, impacting on the necessary cognitive processes for good learning according to studies. (Macedo et al., 2023; Sweller et al., 2019).

To understand the integration of technology in education. TPACK (Technological Pedagogical Content Knowledge) model and SAMR (Substitution, Augmentation, Modification, and Redefinition) model should be examined.

The TPACK (Technological Pedagogical Content Knowledge) model The Technology Pedagogy and Content Knowledge (TPACK) model suggests the integration of three primary types of knowledge:
CK (Content Knowledge): In this case, it is language training or learning areas. Pedagogical Knowledge (PK): Concerning what the teacher knows about teaching and ways to help students learn most effectively. Technological Knowledge (TK): knowledge and use of technological tools, e.g., talking pictures to assist teaching. In the context of sound motion pictures, TPACK helps in understanding how technology can be systematically applied to integrate with the comprehensive process of teaching and learning going on at school as shown biographically below.

CK is short-hand for the value added being talking pictures, which illustrates how to apply abstract ideas in real - world contexts. Talking pictures are considered by PK as a multimodal learning media that can help teachers in the process of teaching and providing information visually with sound. How to (TK): This refers to the technical skills of a teacher who can create and edit talking pictures on tools like Adobe Animate, WondershareVirbo. TPACK, more directly through TCK-Technological Content Knowledge), reframes teachers thinking about how technology can affect the presentation of material. The talk pictures become content in more perfect and personalized style which is ideal to fulfil each students need.

The need for improvement the effectiveness of teaching developed TPACK model (Mishra & Koehler, 2006). It emphasizes the integration of technology with pedagogical and content knowledge. The effectiveness of TPACK is validated all the time, and its importance in teacher education and technology integration in the classroom is emphasized (Mishra & Koehler, 2006; Sofwan et al., 2023).

The SAMR model categorizes technology integration into four stages helping teachers understand the varying impacts of technology on learning, from simple substitutions to major instructional redesigns (Rakes et al., 2022). Furthermore, to improve educational outcomes, technology should contribute to pedagogy (Hamilton, Ro senberg, & Akcaoglu, 2016).

The SAMR model (Substitution, Augmentation, Modification and Redefinition) The SAMR model illustrates four stages of edtech integration community; Substitution (technology replaces old tools, with no functional change) An example would be a talking picture instead of static text or image. Technology augments the

learning by adding functionality. Text is matched with sound in talking pictures giving oral enforcement for improved reception. Revised: How Technology Revolutionizes the Delivery of Instruction Interactive talking pictures are easier to use because you can modify and adapt the content according to how an individual learner might like. if we were to redefine learning: technology creates new opportunities for types of learning and experiences that could not exist without it. This means that videos can be used to deliver targeted content and multimodal learning, which transforms the way learners engage with it. So, as a result from the discussion above in support and utilization of TPACK & SAMR models we have found how by talking pictures while enhancing instruction could be useful with interativity and personalization that may also introduce benchmark to talk which makes more sense when integrating technology inside teaching framework.

School culture and the effectiveness of teachers who make use of the TPACK model are indisputably key factors influencing technology integration in education (Khlaisang, Teo, & Huang, 2019; Lai, Wang, & Huang, 2021). To integrate technology at different levels (Li et al., 2023), TPACK must be expanded to include the TPACK and SAMR models. Teachers' knowledge context (XK) must be included in the TPACK model.

The TPACK and SAMR models provide teachers with the tools they need to improve their te aching practices by effectively integrating technology. This will equip teachers with a comprehensive approach to understanding and implementing technology in the classroom. This is the way forward for technology integration in education. TPACK can be divided into three broad categories: content knowledge, pedagogical knowledge, and technological knowledge (Li & Li, 2024; Mensah, F. S. & Ampadu, E. 2024). In addition to pedagogical content knowledge (PCK), technological content knowledge (TCK), and technological pedagogical knowledge (TPK), more specific forms of knowledge exist at the intersection of two categories. At the intersection of all three categories, you will find technological pedagogical content knowledge (TPACK). Furthermore, contextual knowledge encompasses information that does not fall into any of the three categories.

Talking Images in Educational Technology: Integration, Specifications, and Accessibility

Talking images is a technology that combines visual media, audio narration and/or text (subtitles). This combination makes use of technology and software. This paper highlights the importance of talking images in the current educational scene, presents the technical specifications, software tools and accessibility features.

Studies have shown the importance of audiovisual media in improving the learning process. Multimedia responds to the diverse learning styles of students who prefer interactive and multimedia content, especially after covid (Heemskerk, Volman, ten Dam, & Admiraal, 2011; Kemp & Grieve, 2014). Multimodal and multisensory stimulation, combined with audiovisual materials, is an effective way of understanding and clarifying concepts (Harter, 1978).

It is crucial to develop skills in using new technologies to effectively utilize audiovisual technology in education. This motivates students, leading to enhanced student performance (Nasab, Esmaeili, & Sarem, 2015). Moreover, it is crucial that talking images remain accessible to all learners, including people with disabilities (Kuhl, 1992; Lave, 1988). Modern software for creating talking images enables the integration of subtitles, audio narration and interaction. This allows educators to create inclusive learning environment meeting the needs of students with diverse abilities (Ringstaff & Kelley, 2002; Parkes, Zaka, & Davis, 2011).

Technology Specifications

Talking images are based on digital image processing and audio synchronization. These media are activated when projections begin, with sound is integrated and synchronized with the talking image. The basic file formats are JPEG and PNG for images and MP3 or WAV for audio. This seamless integration ensures compatibility across platforms and devices (Gonzalez & Woods, 2018).

Audio files can be integrated into digital images in a simple way. Adobe Animate is the ultimate multimedia authoring tool. It allows you to develop rich multimedia content with ease. Integrating multimedia elements into educational content is simple with Articulate Storyline and Adobe Captivate (Clark & Mayer, 2016).

A learning management system (LMS) is undoubtedly enhanced by the addition of talking images. In schools, these elements can and should be integrated into lessons using an LMS (Moodle, Blackboard). In such a system (LMS), the multimedia content uploaded by teachers is guaranteed to be accessible and compliant with educational standards such as SCORM (Sharable Content Object Reference Model) and xAPI (Experience API). These standards allow for the tracking of student interactions and learning outcomes, which contributes to the overall student learning experience. (Skouradaki et al., 2013).

Captioning talking images is an effective learning tool for hearing-impaired students. It provides them with the information in text form, which helps them understand the auditory information. By adjusting the speed at which the sound is played, the size of the text and the color contrast of the talking images according to the

individual needs of the pupils, we can show respect for the specificities of each pupil. This is a tool suitable for all age groups. Such a learning tool promotes inclusion and respects students with disabilities. (Mayer, 2020)

The Benefits and Challenges of using Talking Images in Education

Talking images are an educational tool that can be used to meet a variety of learning needs and have many pedagogical benefits. Their integration into the classroom has both clear advantages and notable challenges, which must be understood to fully utilize their potential.

Expected Advantages

Talking images align well with constructivist theories and cognitive load principles, which assert that combining text and images helps students understand concepts more effectively (Jonassen, 1991; Sweller, 1988). This dual-channel processing allows students to engage more deeply with the material. Technology like talking images motivates students to actively participate in the learning process while helping them maintain focus throughout lessons (Moreno & Mayer, 2007).

Support for Students who are struggling

It is indisputable that talking images, which carry audiovisual information, are of great benefit to students with dyslexia or visual impairment. These tools offer alternative ways of interacting with learning materials, thereby enhancing comprehension (Rello et al., 2013).

Students can learn at their own pace, which makes learning more inclusive and promotes autonomy and personalized learning (Tomlinson, 2001). Multimedia makes students experience positive emotions during learning, which is associated with better learning outcomes (Moreno and Mayer, 2007).

Interactive Learning and Improved Outcomes

Creating interactive experiences that respect the individual needs of each learner shows the transformative potential of talking images, which make learning more accessible, enjoyable and effective (Mishra & Koehler, 2006).

Challenges and Constraints

Despite their potential, many schools face obstacles in implementing this technology. One major challenge is the lack of adequate infrastructure, as hardware requirements and software compatibility are significant obstacles (Ertmer, 1999). In addition, schools that have limited resources will face difficulties to keep the few expensive advanced talking image generating and presenting software in their supporting systems updated (Anderson, 2008). There are platforms that can do this, but they are quite expensive — even more so than the processes themselves.

Technological Infrastructure and Teacher Training

Mishra & Koehler (2006) intimate that teachers need to be trained in the use of talking images if they are to make effective use of them in classrooms, a scenario requiring both technical and pedagogical skills. Pedagogy as part of the skills needed in talking images (Jonassen, 1991). Teachers must receive continuous professional development to effectively integrate new technologies. Unfortunately, many educational institutions lack the necessary resources to provide ongoing training, due to limited time and financial resources (Johnson & Mayer, 2009).

Incorporating Diverse Learning Styles

However, in order to successfully insert talking images into classrooms, the many different ways students learn must be considered. Certainly, work to synthesize it with care and attention, because this is the hardest part of integrating the new content (Tomlinson, 2001). Breaking down these barriers will lead to the creation of more inclusive, engaging and effective learning environments so that all learners can learn better.

2. Method

Case Study: The Use of Talking Images during a Symposium

This case study explores the use of talking images during a symposium presentation held in Drama, Greece, on April 26-27, 2024, titled "Experiential Workshop: School of the Future: Which Teachers in Which School with Which Students for Which Society?" The target audience comprised educators from primary, secondary, and tertiary education, alongside students, researchers, learners, citizens, and members of the broader educational and scientific community (19 individuals in total). This diverse audience provided a broad perspective on the effectiveness and potential of talking images in various educational settings.

Platform and Tools

The talking images were created using WondershareVirbo, a tool that has been well-known for its capability to integrate visual and audio elements to easily create dynamic educational material.

Design of the Presentation

Following a short presentation, a video with talking images was shown as a springboard for a discussion about innovation in the classrooms of the future. The video with talking images presented was the trigger for a discussion on innovation in school and the future of education. Afterwards, the presenters distributed a QR code printed on a pocket printer giving instructions to the participants on how to scan it. Next, the participants had to complete a questionnaire as to their impressions of the video presentation and the use of the talking images, and to record their thoughts and opinions.

Figure 1. QR Code video presentation

The video presentation aimed to highlight the potential of the new technologies and innovation in education and the classroom. The software used to create it was WondershareVirbo. This software combines visual content with audio explanations, having as optional the use of automatic subtitles. The content of the presentation aimed to show how this technology, of talking images, could improve the learning process.

This was followed by a discussion on good practices of their use and how they could be used effectively in the classroom. Participants' opinions converged on how this technology makes the learning process more engaging and interactive.

Feedback from the discussion will be used to improve the approach and explore more applications of talking images. This case study has shown that innovation in education is the key to the needs of the ever -evolving education community.

Figure 2. QR Code Questionnaire

Ethical Approval

No Ethnical Approval required. The study was conducted in accordance with ethical principles. No application requiring ethics committee approval was made.

3. Results and Discussion

Emotional Responses to the Presentation

A number of participants reported the emotional feelings they had watching these talking images in the symposium. Some of the emotions included feelings of excitement, as many participants stated that they were more eager about the innovation being shared through the presentation. Many of the participants also were just happy with everything overall especially how they combined what you saw and what you heard. Many more conveyed a desire to pursue the technology on some level and explore how talking images could be used in various educational contexts.

Another emotion that stood out in the meeting was impression, where participants' concentrations leveled up and were engaged right into whatever kinds of content they were watching. Although, some people expressed their worries about it might result in over-dependency on technology and the influence appears on socialize, referring to the research results that put emphasis on a balance of learning with technology against human interaction (Jääskelä et al., 2017). Respondents also felt that the presentation was inspirational and encouraged them to think differently about traditional pedagogy.

Evaluation of Presentation Content
Participants were asked to rate the presentation content using a single word or phrase. The most common ratings were: “Useful,” “Creative,” and “I” want to learn more.” This suggests that participants found the presentation worthwhile and interesting, although there is room for improvement. These findings align with existing literature on multimedia learning, which emphasizes the importance of clear instructional design to maximi ze the effectiveness of audiovisual tools (Mayer, 2009).

Satisfaction with the Presentation
The majority of participants were satisfied with the course, with most ratings on a scale of 4 and 5 (with 5 being excellent). This is paralleled with previous studies of multimedia tools in education on the integration of visual aids and interactive technology that benefited student engagement and satisfaction (Mayer & Moreno, 2003).

Usefulness of the Talking Images Tool in the Classroom
Talking Images was rated 4 or above (with a maximum score of 5) in the classroom-setting usefulness scale by the majority of participants. This study further supports the idea that talking images, as combinations of visual and audio stimuli are more effective in learning, possibly through engaging multiple senses simultaneously which is crucial for information retention as well as engagement (Paivio, 1991). The participants reported that this technology is an interesting way for not using traditional teaching strategies and incorporating a more dynamic and interactive learning environment (Clark & Mayer, 2016).

Usefulness in Everyday Life
Participants rated the usefulness of Talking Images in their daily lives, with most ratings in the 3 and 4 range. This indicates that even though the educational use of the technology is appreciated, its ability to transition into real life settings perhaps isn't of a high priority. Nevertheless, more recent work suggests that tools for audiovisual presentation may help in learning not only within classroom walls but also lifelong learning, that is to say better engagement with information in settings both academic and after-school (Kress & van Leeuwen, 2006).

Likelihood of Integrating the Technology in the Future
Most participants considered it very likely that they would incorporate Talking Images technology into their courses in the future, with most ratings in the 4 and 5 ranges. There is an increasing adoption of technologies to embrace the needs of a new generation of learners who expects a more interactive and immersive education (link) with modern educational models which rely on innovation (Kong et al., 2014). The anticipated future integration is indicative that members perceive the benefits of using talking images for developing student - centered learning environments extending beyond merely a temporary solution.

Final Impressions of the Presentation
Open-ended questions indicate that participants felt positive after the course, with comments such as 'excited', 'satisfied' and 'open'. Some expressed concerns about over-reliance on technology and the need for more training and support.

The use of Talking Images appears to be effective in increasing participant engagement and understanding. Participants were generally positive and found the experience useful and interesting. However, some challenges need to be addressed, such as the need for ongoing training and support to fully integrate this technology into education.

According to Hattie (2009), talking images affect students' engagement and retention by stimulating a positive emotional reaction. Previous studies (Mayer, 2009; Clark & Mayer, 2016) have also found that audiovisual media have a positive impact on learning. Educational technology can be utilized to enhance the effectiveness of teaching by using talking images. It is apparent from the positive reaction of students and their intention to incorporate technology into their future courses that talking images is an innovative and powerful teaching tool.

Learning content can be more engaging and easier to understand with talking images, which combine visual and auditory stimuli. Using visual and auditory stimuli together attracts and retains students' attention more effectively than using text alone. In addition to reducing cognitive overload, speaking images make learning more enjoyable and effective by engaging both the visual and auditory channels. As a result, students become more motivated and engaged in class. A study by Moreno & Mayer (2007) demonstrates that students who use multimedia tools, such as talking images, report more positive emotions during instruction. These feelings directly influence motivation and learning outcomes. Students may be able to engage in content in a self-directed manner by using talking images that allow them to control their learning pace.

Talking images are the ideal tool for different student profiles, different learning needs and preferences. They are adaptable, and this is why. Text sizes, volume and language can be adjusted to suit students with disabilities, non-native speakers or those who prefer audiovisual learning. (Tomlinson, 2001)

Furthermore, the option to personalize content ensures students receive tailored learning, matching their knowledge and learning pace. They can dedicate more time to challenging concepts without feeling pressured.

4. Conclusion

Audiovisual media is an effective way to improve learning process (Mensah, & Ampadu, 2024). The integration of "talking images" is an attractive and motivating tool for different target audiences. Talking images evoke positive emotional responses in participants, such as excitement and curiosity.

The combination of audiovisual properties in talking images is the most effective way to meet a wide range of learning preferences and needs. Cognitive load theory proves that when visual and verbal information is presented simultaneously, the human brain processes information more efficiently (Sweller, 1988; 2023). Talking images are an effective tool for facilitating active knowledge construction and are part of the constructivist approach (Jonassen, 1991; Mayer, 2014). Our study clearly shows that participants want to incorporate talking images into their lessons. Mishra & Koehler (2006) are clear that effective teaching strategies must integrate technology, pedagogical knowledge, and content knowledge according to the Technological Pedagogical Content Knowledge (TPACK) framework to be effective. Teachers transform learning experiences through the Substitution, Augmentation, Modification, and Redefinition (SAMR) model.

Teachers must receive ongoing education, training, and support in innovative technologies in education to fully benefit the educational process and improve their teaching practices and student learning outcomes. (Johnson & Mayer, 2009; Ertmer, 1999). Talking images are a promising innovation in education, as they can significantly enhance teaching and learning. Multimedia tools will help educators create more engaging, inclusive, and effective learning environments. Future research must focus on the applications and impacts of talking images in educational settings, exploring how to use them.

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