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Artificial Intelligence Tools for the Creation of Educational Videos for Teaching

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Abstract
The use of Artificial Intelligence tools for the creation of educational videos is transforming teaching and learning. It is important to highlight the capacity of these tools to turn written content into attractive animated videos, thereby helping the students to understand the topics. The creative functions promoted by AI, such as text and image generation, color gradation and ultra slow-motion camera, offer new possibilities for the creation of educational content. These technologies not only foster creativity and imagination, but they also stimulate the interest of the students and motivate them to develop skills such as written expression and the construction of descriptive sentences. The dynamic and attractive creation of images and animated videos expands the creative options, enabling the exploration of new ways of presenting the educational contents. In a world at constant technological evolution, it is essential for teachers to make use of these tools to enrich the educational experience and prepare the students for a digitally competent future. As AI continues to evolve, its impact on education is expected to increase, transforming the way in which people teach and learn all over the world.

Keywords: Artificial Intelligence, APPs, educational video, emerging technologies.

13.1. Introduction

The history of humanity has been intrinsically linked to technological progress. From the dawn of prehistory, human beings have used technology, starting with basic tools like sharpened stones and sticks to hunt and ensure their survival, which allowed them to access food sources and protect themselves from the threats of their environment.

In time, technology continued to evolve, from the discovery of the wheel and the development of metal smelting, to the invention of the press and the steam engine. These technological developments were fundamental for the Industrial Revolution, which marked the beginning of a new chapter in the history of humanity.

The age of computers, which began in the mid-20th century, transformed the human capacity to carry out complex calculations. In the 1990s, the emergence of the Internet revolutionized the way in which people access information, purchase products and services and communicate, among other functions. A significant milestone in the last decades was the boom of mobile de-

vices, which have become an essential element of daily living. Nowadays, we are at the verge of a new technological revolution with the advance of Artificial Intelligence, which is expected to further transform our way of living and working.

13.2. Artificial Intelligence in Education

Throughout history, the use of technologies based on language has marked significant milestones, including: the invention of writing, which introduced the symbolic use of language; the press, which revolutionized the dissemination of knowledge, speeding it up and expanding its reach; and the development of computers, with their capacity to use binary language, which has been fundamental in the digital and technological era (Bozkurt, 2023).

Currently, a search in Google Academic using the terms "Artificial Intelligence in Education (AIED)" returns 4,490,000 results, demonstrating the vast influence and accelerated growth of this field, which is enhanced by its growing interest (Patel & Shahapurkar, 2021; Ilham et al., 2024).

Grassini (2023) pointed out that, in the last decade, technological advances have radically transformed educational practices. In particular, Artificial Intelligence (AI) has had a profound impact. The recent evolution of automatic learning has facilitated the creation of advanced digital contents, such as Generative Artificial Intelligence (GAI), which plays a significant role in education (Bozkurt et al., 2023).

AIED implies the use of computers and other types of devices to emulate, for example, aspects of human perception and decision making, with the aim of completing specific tasks. Essentially, AI encompasses processes through which machines identify complex factors and learn from them (Allam et al., 2023).

According to the European Commission (2022), AI has great potential to transform education, benefiting students, educators and managers of educational centers. Currently, AI helps to identify specific learning needs, offers personalized educational experiences, and facilitates the making of strategic decisions in educational institutions. AI manifests in both software (e.g., virtual assistants and search engines) and integrated technologies (e.g., robots and autonomous cars) (European Commission, 2022).

It is fundamental to analyze how AI can optimize the teaching-learning process and help education systems to make use of modern tools for the promotion of equity and educational quality (Allam et al., 2023).

As was stated by Domínguez-González et al. (2023), AI is redefining learning and remodeling the educational landscape (Naidu & Sevnarayan, 2023; Nipun et al., 2023). Jamal (2023) argued that, although AI offers great possibilities to improve teacher training and customize learning, it is fundamental to consider ethical, social, technical and cultural aspects, including concerns about privacy and bias (Jamal, 2023). Chat Generative Pre-Trained Transformer (ChatGPT) stands out as an influential technological development, which was trained to generate dialogues based on the requests of the users (Fergus et al., 2023). According to Naudi & Sevnarayan (2023), the efficacy of ChatGPT depends directly on the clarity and precision of the questions posed (Naudi & Sevnarayan, 2023).

AI has enabled a personalization of learning that was previously unreachable, thereby allowing the user to adjust the study content and pace to the individual needs, which favors a more effective learning and promotes diversity in the classroom (Istrate, 2019; Biswas et al., 2023). However, the integration of AI in education faces important challenges, including the concern that it may dehumanize education and the need to address it ethically, in order to prevent discrimination and protect the privacy of the students (Kerrigan et al., 2022).

The importance of Artificial Intelligence cannot be ignored in this era of innovation and transformation in many fields, including education (Ilham et al., 2024).

13.3. Artificial Intelligence Tools for the Creation of Educational Videos

This section presents some of the AI tools that allow creating educational videos.

Runway[1]

Runway is an AI-enhanced content-creation platform designed to facilitate content creation, edition and collaboration for the users. This tool offers a wide variety of creative functions enhanced by AI, such as text-to-image generation, erase and replace, AI training, text color gradation, ultra slow-motion camera, image-to-image generation, and infinite image. Furthermore, it has advanced video edition tools, such as green screen, image recovery and movement tracking.

By using AI models, Runway allows users to transform images and videos in a creative manner, even creating images from text messages. It simplifies tedious, repetitive and time-consuming tasks in the creation and edition of content, granting users full control over their creative projects. Likewise, it offers collaboration tools to facilitate the safe exchange of compositions, assets and content among teams. In addition, it provides a wide selection of professional templates that users may customize with only a few clicks.

Some of the educational possibilities provided by Runway are:

- Creative Tools for Design and Art: helps students and teachers explore new forms of digital creativity. It can be used in graphic design, digital art, and multimedia courses to teach students how to generate innovative images, videos, and visual effects.
- STEAM Education: By integrating science, technology, engineering, arts and mathematics (STEAM), Runway teaches complex concepts more visually and engagingly. Teachers use its capabilities to create simulations, data visualizations and 3D models that facilitate understanding complex topics.
- Project-based learning: It allows students to work on hands-on projects that require emerging technology, enhancing their technical and creative skills and fostering teamwork, problem-solving and critical thinking.
- Developing digital skills: In this society, familiarity with AI tools is crucial for students to learn the principles of Artificial Intelligence and machine learning, and how they apply in the real world, preparing them for the future.

1. https://runwayml.com/

- Personalised learning: It allows creating personalized educational materials adapted to each student's needs and learning pace. This is especially useful in inclusive and differentiated learning environments.
- International and multidisciplinary collaboration: Ease of use and online access enable collaborative projects between students from different disciplines and countries, fostering cultural exchange and interdisciplinary innovation.
- Up-to-date teaching: Teachers keep up to date with the latest technologies and teaching methodologies, integrating AI tools into their curriculum and pedagogical practices.

Fliki[2]

Fliki is an online platform that allows converting text or content from a blog into videos with AI-generated voices in a few minutes. The user simply enters a text or the URL of a blog, and this tool summarizes the content and selects the suitable images and videos to create a human voice-off video with customized subtitles.

With over 900 AI voices in more than 65 languages and 100 dialects, the user may choose the voice that best suits her/his audience and communication tone. Moreover, the script and the pronunciation of the text converted to voice can be edited.

Fliki also allows sharing content in different formats and platforms, such as YouTube, TikTok, Spotify and Instagram. The advantages of using Fliki for the creation of presentation videos include the capacity to generate videos from text or blog links with human voices and customized subtitles, the selection of a wide variety of languages, dialects and accents for the voice-over, the ease to edit the script and the pronunciation of the text converted to voice, the option of republishing the content in different formats and platforms, and the capacity to transcribe audio and video quickly and accurately.

The following are some of the educational possibilities provided by Fliki:

- Creating accessible educational content: Fliki can help teachers convert written lessons, course notes, and study materials

2. https://fliki.ai/

into audio and video content, making information more accessible to students with different learning styles, including those with visual impairments or reading difficulties.
- Supporting distance learning: It allows creating more engaging and personal course materials that complement existing digital resources.
- Promoting literacy and language: By supporting language and literacy learning, learners can hear the correct pronunciation and intonation of words and phrases in different languages.
- Enriching study material: Enriching study materials with audio narrations and explanations provides an additional resource that students can use to revise and reinforce their learning outside the classroom.
- Innovating in presentations and projects: More dynamic and interactive presentations and projects can be created, integrating voice narrations and videos. This improves students' presentation skills and allows them to experiment with new forms of creative expression.
- Access to diverse voices and languages: Fliki offers a wide range of voices and support for multiple languages, enabling the creation of inclusive and diverse educational content to suit different cultural and linguistic contexts.
- Feedback and Assessment: teachers can use Fliki to provide personalised verbal feedback to students on their work or to create oral assessments, which is beneficial in language courses or areas where verbal expression is critical.
- Learner autonomy: learners are empowered by being allowed to create their own learning resources, encouraging research, synthesis of information, and creativity. This promotes autonomous learning and the development of digital skills.

Steve AI[3]

Steve is an online platform for the creation of videos through AI technology that helps users in the development of professional-quality videos in only a few minutes. It was designed to satisfy the needs of any individual or company that requires producing videos quickly and simply, and it offers different applications,

3. https://www.steve.ai/

including the creation of invitation videos and the production of corporate content.

Some of the educational possibilities that Steve AI offers are the following: creating engaging educational content, fostering comprehension and retention, stimulating creativity and critical thinking, supporting multimodal learning, facilitating language learning, developing digital skills, innovation in presentations and projects, inclusive education, distance and online learning, collaboration and teamwork, etc.

Pictory[4]

Pictory is an AI-based platform that helps users to create professional-quality videos from full text, including archive material, music and voice-off. Thanks to its advanced AI technology, it simplifies the entire process, enabling the creation of professional videos effortlessly. It offers a wide range of templates and styles, as well as the possibility of personalizing and editing the video content, including tools to add text, images and music.

Pictory AI has several AI-mediated functions that increase the quality of the videos, including the automatic generation of subtitles to improve the accessibility and commitment of the audience, and the possibility of customising aspect ratios to adapt the videos to different platforms and formats, guaranteeing an optimal visualization in any device.

Moreover, it provides the option of selecting personalized voiceovers from a variety of natural options to add a professional narration. Users can also access a large library of music to complement their videos and establish the adequate tone. Likewise, Pictory AI allows improving videos with visual effects and animations, making them more interesting and visually attractive.

Some educational possibilities that Pictory offers are transforming curricular content into videos, fostering creativity and personal expression in students, supporting multimodal learning, improving reading comprehension and language, and facilitating distance learning, professional development and teacher training.

4. https://pictory.ai/

Invideo[5]

InVideo AI is an online video edition platform that stands out for its wide range of functions, options and tools designed to facilitate its use for digital content creation. To employ the text-to-video function of InVideo AI, the user introduces the key sentence or word to create the video. The tool analyzes the sentence and selects relevant images and video clips that will be incorporated into the final video.

Once the images and video clips are selected, the user can customize the content with text and music, using the different video and image templates available in InVideo AI. By generating a video with this platform, it is possible to add text, links to articles, images and videos directly. Depending on the desired option, the platform will automatically identify the key elements, questions and words that are relevant for the creation of a personalized video.

With regard to the topics addressed by InVideo AI, there are different categories, such as business, education, health, technology and tourism, among others, which allow creating videos for marketing, slide presentations, introductory videos, commercials, and content for social networks.

Some of the educational possibilities that InVideo AI provides are the following:

- Creating didactic material: Teachers can create a) concise and engaging video lessons to explain complex concepts, offering a visual alternative to traditional teaching methods, and b) videos summarizing the units or topics covered, providing students with a quick and effective review tool.
- Encouraging student participation through class projects and digital portfolios.
- Supporting distance learning. Creating rich video content for online courses or as a supplement to online classes can significantly enhance the distance learning experience, keeping students engaged and facilitating understanding of complex topics.
- Developing digital skills in media literacy and technological skills development.

5. https://ai.invideo.io

CapCut[6]

CapCut is a video edition application that allows users to express their creativity online through its characteristics and tutorials. The inclusion of AI-enhanced generative avatar functions, along with verification measures, significantly expands the edition capacities and strengthens the safety of the platform.

The integration of these new characteristics in CapCut helps users to verify their identities and employ AI-enhanced generative avatars to enrich their video edition experience. These functions can be combined with others, such as animation, filters and effects, to create original and exciting content.

To date, CapCut has introduced different smart tools, such as the removal of backgrounds in videos, automatic subtitles, and voice-to-text conversion, among others. These functions based on AI are greatly facilitating the video edition process for users.

Furthermore, CapCut users can make use of AI capacities to generate unique avatars, which increases the customization of their audiovisual content. By combining these new functions with the existing tools of the application, such as animation, layers and audio synchronization, the creativity and dynamism of the avatar function is potentiated. CapCut is constantly developing the digital avatar function, which facilitates the publication of videos that are verified in a simple manner.

Some of the educational possibilities that CapCut provides are the following: creating didactic content, fostering student creativity, collaboration and knowledge sharing, assessment and feedback, accessibility and inclusive learning, and teacher professional development.

Synthesia[7]

Synthesia is a tool that facilitates the creation of high-quality videos in a simple manner. This platform combines 3D animation with face-recognition technologies and language processing based on Artificial Intelligence, which results in the generation

6. https://www.capcut.com/es-es/tools/ai-video-generator
7. https://www.synthesia.io

of realistic "synthetic" characters whose appearance, sound and behavior are similar to those of real people.

Users can generate content using the predefined AI presenters of the platform or the AI generation function to create virtual versions of themselves, known as artificial reality identities. These avatars may narrate videos created from text, and the voice database of Synthesia offers a wide variety of gender options in more than 60 languages.

It is important to highlight that Synthesia forbids the use of its software to impersonate politicians or celebrities, requiring explicit consent and a thorough process of selection for the use of a person's image, with the aim of preventing possible misunderstanding.

Companies usually employ Synthesia more frequently for activities such as tutorials, training and presentations. This tool has been used for the creation of chatbots, reports, demonstrations of products and advertising campaigns.

The AI technology of Synthesia can be used to create realistic videos from scratch and to adapt existing audiovisual content, thereby offering a wide variety of creative and communication possibilities.

These are some of the educational possibilities provided by Synthesia:

- Creating customized learning materials: a) It can be used to create customized video lessons to explain complex concepts, providing a more interactive and engaging way of learning than traditional methods. b) The ability to generate videos in multiple languages facilitates the creation of accessible learning materials for students from different linguistic backgrounds, promoting inclusion and access to education.
- Encouraging student participation: a) Students can use Synthesia to create presentations of their projects, research or ideas, allowing them to focus on content without worrying about language barriers or stage anxiety. b) Through virtual avatars, students can participate in role-playing or decision-making scenarios, which is especially useful in areas such as ethics, business, and health.
- Improving accessibility: the integration of subtitles and the possibility of translating the text into different languages im-

prove accessibility for students with hearing disabilities or those who are not native speakers of the language of the course.
- Teacher professional development: by creating in-service training or professional development modules, allowing teachers to update their skills at their own pace and according to their specific needs.

Pictory AI[8]

The Pictory AI platform employs AI to produce high-quality videos, which makes it a especially beneficial tool for teachers, since videos are highly attractive resources for students of all ages.

Pictory AI allows saving time in the creation of educational content, generating videos in a matter of minutes. Its friendly interface facilitates its use, since AI does most of the work. Moreover, it allows narrating the videos with the user's own voice or AI-generated voices, which are quite realistic.

This platform offers different functions to create videos. It is possible to convert a script to a video with images, music and voiceover. By copying and pasting the script in the application, it generates images based on text without the need for manual edition. Furthermore, videos with voice can be edited using text, since, when uploading a video, the text is automatically transcribed, enabling adjustments in the text or the addition of voiceover. Thus, the user can modify existing videos or add narrations.

In addition, it is feasible to create videos from articles or blog publications, extract fragments of long videos to draw attention, and even add subtitles automatically to expand the reach of the content.

Thanks to its ease of use, it is possible to generate high-quality videos without the need of having advanced technical knowledge. The user can simply follow these steps: start by adding text, slides, or other videos, and then customize the background to give it a special and attractive touch; bring up the relevant text to highlight the key points and choose the voiceover that best suits the content, either with your own voice or with AI-generate voic-

8. https://pictory.ai/

es, which are very realistic; once completed, the video can be downloaded and shared in different formats.

Pictory provides the following educational possibilities: creating visual didactic content, enriching educational material, facilitating differentiated learning and teacher professional development by giving the user access to improved and visually appealing training material, etc.

Sora[9]

Sora, developed by OpenAI, is an AI system specialized in the generation of videos from text. As other systems of the company, such as ChatGPT and DALL-E, Sora is based on language model technologies like GPT. This system allows the users to describe what they wish to see in a video through text commands, which Sora interprets thanks to its training with a wide library of videos.

Sora is able to understand and recreate movements, complex scenes with multiple characters, detailed environments and visual effects requested by the users. For example, it can generate videos of an elegant woman walking in the streets of Tokyo full of neon lights and urban signs, accurately reflecting the clothing, accessories and environmental details described in the prompt.

In its initial development, Sora can create videos of up to 60 seconds, although OpenAI warns about possible limitations in the exact recreation of certain physics. The quality of the results generated by Sora depends on the clarity and detail of the descriptions provided in the text commands, which allows obtaining precise and customized results.

13.4. Discussion and conclusions

Nowadays, in the different actions that we carry out throughout the day, such as the way in which we communicate, learn, gather information and make decisions, everything revolves around AI (European Commission, 2022). It is part of our daily living (Aoun, 2017). At the general level, and according to the OECD (2019), AI is a general-purpose technology with the potential to:

9. https://openai.com/sora

improve the well-being of people; contribute to a positive, global, economic activity; increase innovation and productivity; and help to respond to the key global challenges (Bolatito, 2024). Arslan (2020) stated that AI is one of the most important technologies worldwide.

AI has reached omnipresence in daily living (Adiguzel, Kaya, & Cansu, 2023). A wide range of examples show that AI has permeated different aspects of human life, such as access to information through the Internet, the consumption of news and entertainment, face-recognition surveillance systems that identify people, the performance of financial markets, and the way in which drivers and pedestrians commute (Williamson & Eynon, 2020). As AI advances, the possibilities that were only notional may soon become tangible. A new application has been released recently, known as "Sora", which allows creating videos from text with exceptional quality. Therefore, AI has the potential to revolutionize the different aspects of society, from the business sector to healthcare and education (Alawi, 2023).

We use an increasing number of AI systems, sometimes without even noticing, such as search engines, smart assistants, conversation robots, language translation, navigation apps, online videogames, and many other applications that use AI in our daily living (European Commission, 2022).

Thus, we can state that AI is the ability of a machine to present the same capacities as human beings, such as reasoning, learning, creativity and planning (Arslan, 2020). That is, AI is the use of computer machines to think and act humanly and rationally (Allam et al., 2023).

Nowadays, it is fundamental for initial and continuing teacher training to include digital competences in the creation of educational videos with AI. It is recommended for future studies to expand the search for tools, due to the continuous advance of technology.

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