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Commentary and Opinions

OpenAI’s Sora in medical education: artificial videos in the classroom of the future

Sora d'OpenAI dans l'enseignement médical : des vidéos artificielles dans la salle de classe du futur

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Introduction

The use of videos in medical education has expanded significantly, driven by the need for dynamic, engaging instructional tools. OpenAI's Sora represents a promising AI advancement in video creation, leveraging large-scale models to generate videos aligned with text prompts (Figure 1).[1] Powered by Large Language Models (LLMs) like those behind ChatGPT and Google’s Gemini,[2-5] Sora could help bridge the gap between text input and video output, transforming educational content creation by simplifying the production of high-quality instructional videos.

Advantages of video over existing learning methods

Many medical students today favor visual learning, making video a valuable tool in education. Videos scale instruction beyond geographical limits,[6] providing consistent presentations of medical procedures and reducing variability from human demonstrators.[7] This standardization ensures all learners receive the same quality of instruction, essential for mastering complex clinical skills. Additionally, videos engage both text and visual processing channels, aiding comprehension and retention of intricate concepts.[8]

In medical education, Sora has the potential to make complex procedures, case studies, and hypothetical scenarios more accessible to students. However, Sora’s capabilities remain speculative; currently, it’s limited to select research groups and requires further testing to assess its effectiveness and accuracy in delivering reliable educational content.

Figure 1. Screencap from video generated by Sora from the prompt: “A grandmother with neatly combed grey hair stands behind a colorful birthday cake with numerous candles at a wood dining room table, expression is one of pure joy and happiness, with a happy glow in her eye. She leans forward and blows out the candles with a gentle puff, the cake has pink frosting and sprinkles, and the candles cease to flicker, the grandmother wears a light blue blouse adorned with floral patterns, several happy friends and family sitting at the table can be seen celebrating, out of focus. The scene is beautifully captured, cinematic, showing a 3/4 view of the grandmother and the dining room. Warm color tones and soft lighting enhance the mood.” (OpenAI)

While AI-generated videos like Sora’s streamline content creation, they require expert oversight to ensure accuracy. AI alone cannot guarantee precise medical visuals, and inaccuracies or subtle anatomical misrepresentations could mislead students who may not be able to discern for themselves. Thus, rigorous validation by medical professionals is essential. Moreover, AI models like Sora depend on their training data, which may lack coverage of emerging techniques or rare conditions, limiting their educational scope. As a result, Sora's potential in medical education is significant but must be supplemented with traditional tools to provide comprehensive and reliable information.

Visualizing complex concepts

Medical education, particularly in the pre-clinical stages, requires mastery of intricate physiological processes and detailed anatomical structures. Sora's AI-generated videos can be leveraged to dynamically represent these topics, offering medical students an interactive and visually enriched learning experience. Additionally, AI-generated videos can be tailored to target specific learning outcomes, enabling educators to deliver content more quickly and reduce the cognitive overload that often accompanies traditional text-based learning methods. However, a significant limitation of using AI-generated content like Sora's is the difficulty in ensuring consistent anatomical accuracy, particularly in areas that involve highly variable or nuanced structures, such as the vasculature of the brain or the intricate layering of tissues. Current AI models, including Sora, may struggle to accurately depict such details, which are critical for students in fields like surgery or neurology. This limitation underscores the importance of continued human oversight and validation in ensuring that AI-generated videos meet the rigorous standards required for medical education.

Learning by teaching

In addition, medical students can actively participate in generating their own educational videos with Sora. The well-established educational principle of "learning by teaching" suggests that content creation can significantly enhance mastery of material.[9] By involving students in the process of generating AI-driven videos, they can take a more active role in their education and deepen understanding of both complex topics as well as suitable learning. To create accurate AI-generated videos, however, medical students must first conduct research on their own chosen subject, reinforcing their knowledge and mitigating any false AI-generated content. Additionally, collaborating with peers on these projects serves a dual role of fostering communication and teamworking skills while also promoting critical evaluation of external content, essential skills for clinicians to have. AI-generated videos have the potential for perpetuating inaccuracies if students lack the necessary expertise to detect subtle errors in AI outputs. Without proper oversight by experienced medical professionals, there is a risk that inaccurate or incomplete information could be disseminated, particularly in areas where AI might struggle to fully grasp medical nuances. This concern is especially relevant given the broader issue of healthcare misinformation, a problem that became evident during the COVID-19 pandemic, when nearly one in of the most popular English-language YouTube videos on COVID-19 contained misleading.[10] As such, future physicians must not only learn to produce AI-generated educational content but also critically assess its accuracy to prevent the spread of misinformation.

Conclusions and future directions

In summary, Sora presents a promising AI tool for advancing medical education through visually engaging videos. While it offers new teaching avenues, the limitations of Large Language Models (LLMs)[11-14] must be considered. Without human-like understanding, LLMs are prone to minor errors in language and syntax that can lead to inaccuracies, and current AI models struggle with precise anatomical detail and regular patterns (e.g., fingers or teeth). These limitations require rigorous product validation, as inaccuracies could compromise educational quality. Additionally, Sora's reliance on existing data constrains its ability to depict rare conditions or novel procedures.

To unlock Sora's potential, empirical research should assess the impact of AI-generated videos on learning outcomes, and ongoing refinement is essential to ensure reliable, accurate content. With careful validation, AI like Sora can enrich medical education, offering meaningful benefits to both students and educators.

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