Published Date: - 30-01-2025
Page No: - 199-201

THEORIES ON THE NEWEST EDUCATIONAL ANIMATION TOOLS FOR TEACHING ENVIRONMENTAL CONCEPTS

Sulaymonova Saodat Usubxonovna
Senior teacher of the "Pedagogy and Psychology" department, Namangan State Pedagogical Institute, Uzbekistan

Abstract
As environmental issues become increasingly critical in modern society, there is a growing need to educate younger generations on these concepts in engaging and effective ways. This article explores the theories behind the latest educational animation tools designed for teaching environmental concepts. By examining approaches such as constructivist learning, cognitive load theory, and multimedia learning principles, this study highlights how these tools facilitate better understanding and retention of ecological topics. The article also discusses the role of gamification and immersive technologies like augmented reality and virtual reality in enhancing students' engagement and promoting active learning. The insights provided can guide educators in selecting and utilizing animation tools that make environmental education more interactive, impactful, and accessible.

Keywords: Educational animation tools, environmental education, constructivist learning, cognitive load theory, multimedia learning, gamification, augmented reality, virtual reality.

INTRODUCTION
Environmental concepts, such as climate change, deforestation, and biodiversity loss, are often complex and abstract, making them difficult for students to grasp through traditional teaching methods. The introduction of advanced educational animation tools has transformed the way these topics are taught, providing visual and interactive learning experiences. This article examines the key theories that support the use of these tools in environmental education, emphasizing their role in enhancing student engagement, comprehension, and retention.[1] Constructivist learning theory posits that knowledge is constructed through experiences rather than passively received. In the context of educational animation, this theory supports the idea that students learn more effectively when they actively engage with content. Animation tools that allow students to manipulate variables, such as the factors influencing climate change or ecosystem dynamics, help them build a deeper understanding of environmental concepts.[2] By visualizing the immediate effects of their actions, students are more likely to internalize the information and develop a personal connection to the subject matter. Environmental education has become increasingly essential in today's world as the urgency to understand and combat ecological challenges grows. Traditional teaching methods often struggle to engage students with abstract concepts like climate change, pollution, and biodiversity. However, recent advancements in educational animation tools are changing this landscape, making learning about environmental issues more interactive, engaging, and effective. This article explores the theories behind the newest animation tools for teaching environmental concepts, examining how they help students grasp these critical subjects in more meaningful ways.

Cognitive Load Theory. Cognitive load theory focuses on the limitations of working memory and the need to manage cognitive load for optimal learning. Educational animations can simplify complex environmental topics by breaking them down into manageable chunks of information. By using visuals, sound, and interactive elements, these tools reduce the cognitive burden on students, allowing them to focus on understanding the underlying principles. For example, animations that depict the carbon cycle can present each step individually, guiding students through the process in a logical sequence and preventing cognitive overload. According to the principles of multimedia learning, people learn better from words and pictures than from words alone. Educational animation tools capitalize on this by combining audio, text, and visual elements to explain environmental concepts in a cohesive manner.[3] Mayer's Multimedia Learning Theory emphasizes that well-designed animations can enhance learning by guiding students' attention to relevant information, using dual coding (verbal and visual), and minimizing extraneous content. This approach helps students form mental models of complex environmental systems, improving their ability to recall and apply knowledge.

Gamification and Engagement. Gamification is another powerful strategy in educational animation tools, using game-like elements to motivate and engage students. Concepts like points, levels, and challenges can make learning about environmental issues more enjoyable and competitive. Gamified animation tools encourage active participation, as students are motivated to solve problems, complete tasks, and achieve goals related to ecological topics. This approach not only increases engagement but also fosters a deeper understanding of the material by connecting learning objectives with interactive gameplay.[4]

Immersive Technologies: AR and VR. Augmented Reality (AR) and Virtual Reality (VR) are revolutionizing the field of educational animations by creating immersive learning experiences. These technologies allow students to explore virtual environments that simulate real-world ecosystems or environmental phenomena. For instance, VR can transport students to a coral reef to observe marine life and the effects of pollution in a way that feels real and immediate. AR can overlay digital information onto physical surroundings, enabling interactive exploration of subjects like forest ecosystems or renewable energy sources. Immersive technologies help bridge the gap between theory and practice, making abstract concepts tangible and easier to understand[5].

CONCLUSION

The newest educational animation tools, grounded in learning theories such as constructivism, cognitive load, and multimedia principles, offer innovative ways to teach environmental concepts. By incorporating gamification and immersive technologies like AR and VR, these tools significantly enhance student engagement, comprehension, and retention. As environmental challenges become more pressing, using these advanced educational methods can play a crucial role in equipping the next generation with the knowledge and skills they need to address ecological issues effectively.

REFERENCES

1. Huang T. C., Chen C. C., Chou Y. W. Animating eco-education: To see, feel, and discover in an augmented reality-based experiential learning environment //Computers & Education. – 2016. – T. 96. – C. 72-82.

2. Mayer R. E., Moreno R. Animation as an aid to multimedia learning //Educational psychology review. – 2002. – T. 14. – C. 87-99.
3. Mayer, R. E. (2009). Multimedia Learning. Cambridge University Press.
4. Wang M., Shen R. Message design for mobile learning: Learning theories, human cognition and design principles //British Journal of Educational Technology. – 2012. – T. 43. – №. 4. – C. 561-575.
5. S.Sulaymonova. Ekologik tushunchalarga yo‘naltirilgan qiziqarli va ta’limiy animatsiyalarni ishlab chiqishning asosiy tamoyillari.//NamDU ilmiy axborotnomasi// №-12 son 2024 yil. 913-b