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Expanded Reality and its Types, The Usefulness of Expanded Reality in Educational Fields

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Abstract: It has been proven that expanded reality (AR) systems are a crucial factor in enhancing maturity and their effectiveness in the educational environment. Augmented Reality (AR) is designed to overlay digital elements onto real-world objects, allowing for limited interaction with them. Virtual Reality (VR) refers to immersive experiences that enable engagement in a virtual world through specialized headsets and headphones. This article provides information on expanded reality, its characteristics, and the work being done abroad in creating AR applications specifically for education.

Keywords: AR technologies, marker-based AR, markerless AR, location-based AR, superimposition AR, QR code.

INTRODUCTION: Expanded Reality, or augmented reality, can create opportunities that bring additional creativity, interactivity, and engagement to any topic. Studying AR can help students reduce the time required to grasp complex subjects, allowing them to focus more on learning through real-world experiences. In education, expanded reality enhances teaching and learning processes. Learning technologies related to augmented reality enable teachers and educators to integrate game-based learning that can be utilized even outside the classroom. This helps students acquire new knowledge and reinforce their learning skills. There are numerous AR applications related to education, which can be accessed online or downloaded as applications on computers. One such platform is Overly.

You can register on the site through the following link:

https://create.overlyapp.com/

Figure 1.

On this platform, the purpose of use is selected, along with the type of AR.

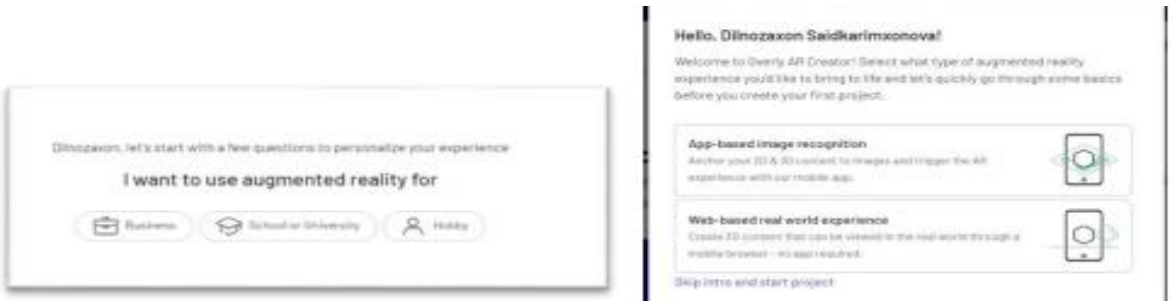

Figure 2.

For example, in the App-based image recognition type, AR results can be viewed by scanning an image with a phone screen. In the Web-based real-world experience type, AR results can be seen by placing models corresponding to a room, building, or environment. To create a new project, it is necessary to name the project, select the type of AR, and choose "Get Started."

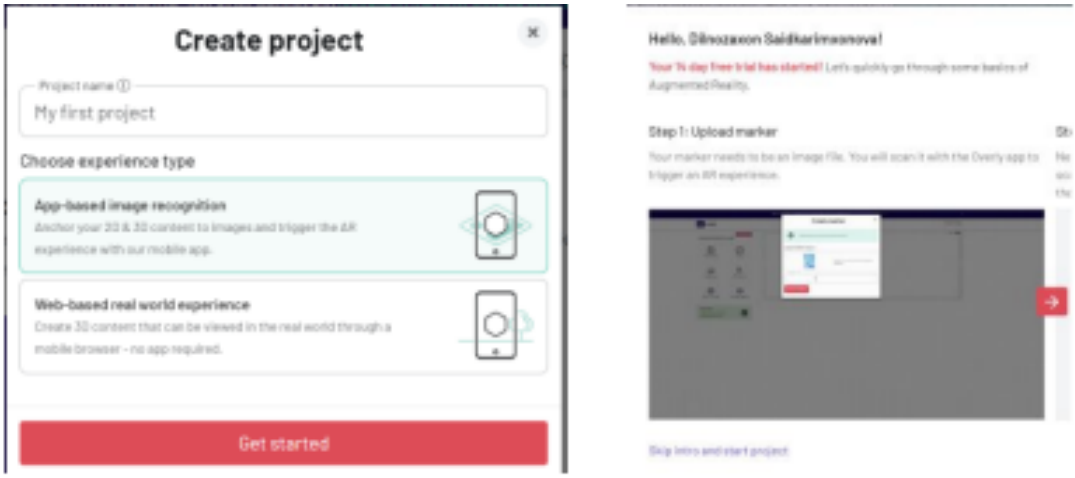

Figure 3.

First, in the project's first type, an image for AR is uploaded. Then, various objects (3D models), text, and videos can be placed onto the uploaded image.

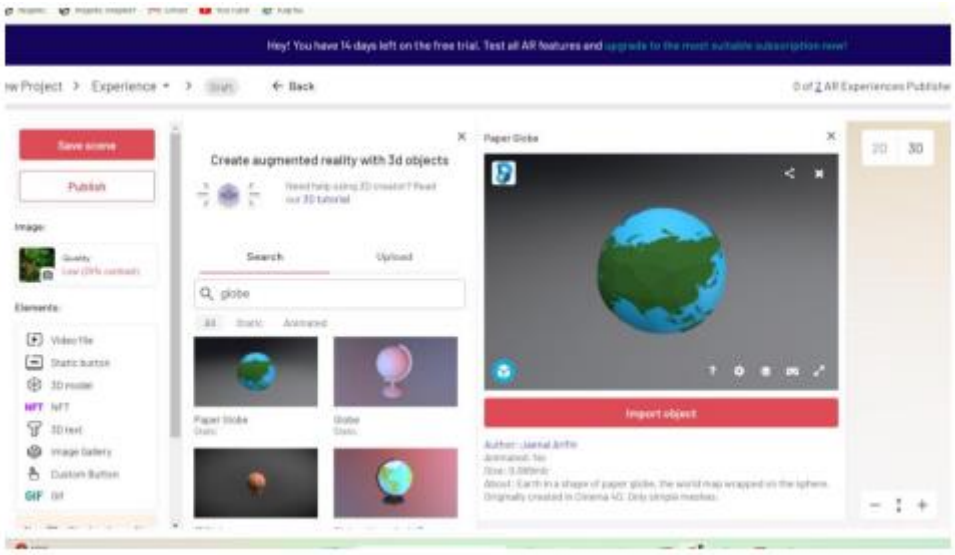

Figure 4.

Once the project is ready, "Publish" is selected.

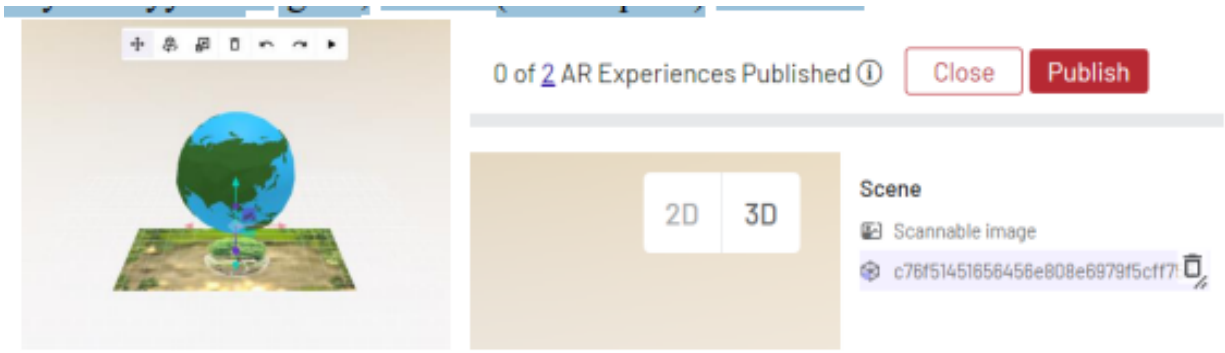

Figure 5.

Next, the Overly app must be downloaded using the QR code, and the chosen image needs to be scanned.

After downloading the app to the phone, the desired language is selected. By scanning, the following result can be seen (the 3D model of the Earth is placed on the uploaded image):

Augmented Reality (AR) technologies have emerged as a powerful tool in education, providing immersive and interactive learning experiences. By integrating digital content into the physical world, AR enhances traditional teaching methods and engages students in new ways. This article explores the application of AR technologies in education, their benefits, challenges, and impact on student learning outcomes.

PURPOSE: The aim of this research is to study the use of AR technologies in educational institutions. The research seeks to identify the advantages and challenges of integrating AR into the curriculum, assess its effectiveness in enhancing education, and provide recommendations for teachers and policymakers on the implementation of AR technologies in classrooms.

DISCUSSION AND RESULTS: The findings indicate that AR technologies bring significant benefits to education, including increasing student engagement, improving the understanding of complex concepts, and enhancing motivation. AR applications provide interactive and visual learning experiences that cater to different learning styles, making abstract or challenging topics more accessible.

CONCLUSION: The research demonstrates that AR technologies have the potential to transform education by providing enriched learning experiences that enhance student engagement and understanding.

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