AUGMENTED REALITY: HOW EFFECTIVE CAN IT BE FOR YOUNG READERS

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Abstract: The theory in connection with augmented reality is the trend of the day and the surety for it to rule the centuries ahead is high. The basic idea behind the convention of augmented reality is to experience things with all the senses. The diversity of experience it provides expands over several horizons, which makes a must-need. One needs to engage and interact with the latest technology and see the "once-unpredictable" reality of life. The kernel of augmented reality (AR) encompasses a user or participant as it is better known and a technology to co-relate the real and virtual in such a manner that they seem the same or as one entity. This paper is a qualitative analysis of the effect of augmented reality on readers, specifically youngsters.

Index Terms – **Augmented Reality, Education, Interactive, Reading, Technology, Visual.**

I. INTRODUCTION

AR assists the user to involve in something exceptionally imaginary or not. Its representation in pop culture today makes it easy for people to understand. The Iron-Man suit in the Marvel movies is a perfect example of it. The automated voice-over in the movie(s) "JARVIS" is an artificial intelligence that the character Tony Stark create. It controls the AR of the suits which includes language and data processing, speech and face recognition, et cetera. Another well-known example is the game "Pokemon GO." It uses satellite images, GPS and the computer language C++ for coding. Its popularity builds on the fact that it needs no expensive equipment. A smartphone and internet connection are the requirements.

It was in 1992 the term "Augmented Reality" was coined by Thomas P. Caudell and David W. Mizell in a paper they presented at the "Fifth Hawaii International Conference on System Sciences." They named the "head-up display headset" the "HUDset." As they mentioned, the "[HUDset] technology is used to 'augment' the visual field of the user with information necessary in the performance of the current task, and therefore we refer to the technology as 'augmented reality' (AR)." It utilizes general and cheap processors for working, a coordinate-graph-like system to superimpose real-time images/data on the actual scenes. Once the real-world data is fed into the system software, the connected headset tracks the scenes or movements, extracts the stored binary information and converts them into sensible output. (Caudell and Mizell).

II. AUGMENTED REALITY

The history of augmented reality emerges from different points down the lane. The image illusion created with glass, used in theatres and other creative platforms is suggested by many to be the initiation of the theory of augmented reality. Giambattista Della Porta, in the 1558 Latin book *Magia Naturalis*, published in English under the title *Natural Magick* (1658), talks about this art of illusion.

…for if we may in any Chamber, if a man look in, see those things which were never there; and there is no man so witty that will think he is mistaken: Wherefore to describe the matter, Let there be the spectator looks in: let the whole window or a part of it be of Glass, as we use to do to keep out the cold; but let one part be polished that there may be a Looking glass on both sides, whence the spectator must look in; for the rest do nothing… (Porta 370).

The first head-mounted AR display "Sword of Damocles" was invented by Ivan Sutherland in 1968, approximately three centuries after the publication of *Natural Magick*. Enhancements to this model resulted in several changes and one of them is the first head-up display (HUD), the McDonnell Douglas F/A-18 Hornet, a US Navy military aircraft officially used since 1978.

III. AUGMENTED REALITY IN DIFFERENT AREAS

The advent of augmented reality captured the core of all sectors in a short span since its widespread news. Healthcare, manufacturing, construction, education, military and sports are some of the areas where AR took off. In the healthcare sector, the machinery assists doctors and other practitioners in attaining precise disease diagnoses. AR headsets, for instance, can receive scan results, and superimposition of these records can help during procedures where it is difficult to handle several results on paper and digital screens.

Manufacturing and construction make use of AR to provide workers with real-time guidance on how to assemble products. By displaying 3D models of products and highlighting the correct tools and parts to use, workers can complete tasks more efficiently and with fewer errors. AR can enhance the shopping experience by allowing customers to try on clothes virtually or see how furniture would look in their home before making a purchase. AR can also be used to provide customers with additional product information, such as reviews and specifications, making it easier to make informed buying decisions.

AR can create immersive gaming experiences, allowing users to interact with digital objects in the real world. AR can also be used to create interactive movies and shows, enabling viewers to become part of the story and experience it in a more engaging way. It can also enhance the tourist experience by providing visitors with information about landmarks and attractions in real time. For example, AR can be used to provide visitors with historical information about a building or monument as they explore it, like the audio guide in Mysuru Palace.

Realistic training simulations for soldiers using artificial intelligence allow them to practice and hone their skills in a safe and controlled environment, for example, to simulate various combat scenarios and practice tactics and strategies, to train soldiers on how to operate complex equipment, such as drones and surveillance systems. AR simulations can help soldiers prepare for various challenges, such as urban warfare or reconnaissance missions. AR can also be used to assist military planners in analysing terrain and identifying potential threats and opportunities. By creating 3D models of the battlefield using AR, military planners can make more informed decisions on troop movements, equipment deployment, and other tactical considerations. The ability to visualize the battlefield in this way can provide commanders with a significant advantage, especially in complex and dynamic environments.

IV. AUGMENTED REALITY AND YOUNG READERS

Marilyn Fleer, in her work *Play in the Early Years*, defines augmented reality as "a live direct or indirect view of a physical, real-world environment where the elements are augmented (supplemented) by some form of digital device" (Fleer 65). In today's era, AR has become a popular technology, and its potential impact on education has been widely discussed. In particular, AR has been seen as a promising tool for young readers, enhancing their reading experience and making it more engaging and interactive.

AR can enhance the reading experience for young readers by providing interactive and engaging content that can help improve their comprehension and retention of information. By incorporating AR into reading materials, young readers can have access to an immersive and interactive experience that can make the reading process more enjoyable and engaging. 3D images, animations, or sound effects can help young readers visualize and understand the content better. This can be especially useful for complex or abstract concepts that are difficult to understand through text alone.

AR can be especially useful for complex concepts or abstract ideas that are difficult to understand through text alone. With AR, children can have access to an immersive and interactive experience that can help them visualize and comprehend the content better. This can help them remember the information and retain it for longer.

While AR technology has many potential benefits, there are also concerns about its negative impact on young readers. While AR has been praised for enhancing the reading experience and motivating young readers, some researchers raise concerns about the psychological difficulties that young readers may face as a result of the inclusion of AR in reading.

AR can be incredibly immersive and captivating, but it can also be distracting. Instead of focusing on the text, young readers may become fixated on the augmented reality elements, leading to reduced comprehension and retention of the material. AR can provide an overload of visual and auditory stimulation, which can be overwhelming for some children. This overstimulation can cause children to become disengaged and lose interest in reading altogether.

AR technology provides pre-determined visual and audio effects, leaving little room for young readers to imagine or create their own mental images. Many traditional readers often have greater imaginative power compared to the ones who have less interest in indulging in reading. This could lead to a lack of creativity and imagination in their reading and learning experiences. Reduced comprehension, overstimulation, self-alienation and technology dependence are some of the potential negative impacts of AR in readers.

While AR can provide interactive and visually stimulating content, it can also distract young readers from the core text, leading to reduced comprehension. AR can make reading more about the technology than the content, leading to a lack of focus on the story or message of the text. AR technology can be overwhelming for some children, leading to sensory overload, disorientation, and frustration. The combination of visual, auditory, and tactile stimuli can be too much for some young readers to process, leading to negative emotional reactions and discomfort. Several contemporary science fictions incorporate this concept. Neal Stephenson's *Snow Crash* and Ernest Cline's *Ready Player One* are two examples.

At the beginning *of Snow Crash*, Hiro is navigating through the Metaverse while wearing his Metaverse headset, and he describes the experience as like being Metaverse only better. However, he also notes that it is easy to get addicted to it, suggesting that prolonged exposure to AR can be problematic. Later in the novel, Hiro encounters a character named Da5id, who has been using a new type of AR software that is particularly intense. Da5id is so overstimulated that he has lost touch with reality and is unable to communicate effectively. Hiro notes that he's been inside too long- he's on overload.

AR technology can be complicated and difficult to use, and technical issues can disrupt the reading experience. Young readers who struggle with technology may become frustrated and discouraged, leading to negative emotions and decreased motivation to continue reading. It can create a solitary reading experience, with children focused on technology and less on social interaction and communication. Reading should be a social activity that fosters collaboration and discussion, but AR may limit these opportunities, leading to feelings of isolation and disconnection.

Overuse of AR technology for reading can create a dependence on technology, leading to a lack of interest in traditional reading methods. AR can also foster a passive reading experience, with children relying on technology to provide them with the content, leading to decreased motivation and self-directed learning. AR technology can be expensive, limiting access for some schools and families. This can lead to inequality in the classroom and prevent children from experiencing the benefits of AR technology, leading to frustration and feelings of exclusion. Frustration, stress, anxiety, discomfort, nausea, discomfort and low self-esteem are some emotional problems that young readers may encounter due to the use of AR.

V. CONCLUSION

In conclusion, augmented reality (AR) technology has the potential to significantly enhance the reading experience for young readers. AR can make reading more interactive, engaging, and entertaining. It can also help young readers to visualize and understand complex concepts, improve their vocabulary, and increase their motivation to read. It can be a valuable tool for promoting literacy and improving the reading skills of young readers. As AR technology continues to evolve, it is important for educators and researchers to continue exploring its potential and developing effective strategies for incorporating AR into the reading curriculum.

However, the effectiveness of AR in reading depends on several factors, such as the quality of the AR content, the appropriateness of the AR technology for young readers, and the implementation of AR in the reading curriculum. Therefore, it is crucial to approach the implementation of AR in reading with caution and to carefully consider the potential negative effects on young readers. Moral Ethics is a key criterion for understanding the use of AR. Future research is needed to better understand these effects and develop effective mitigation strategies.

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