



WHITEPAPER

## Part 2

# Bringing Distance Learning Closer with Virtual and Augmented Reality

# Table of Contents

- ○ Abstract
- ○ Distance and Disengagement: Causes for Concern
- ○ AI Meets VR and AR; The Result is Engaged Learning
- ○ Classrooms of the Future: Things to Watch Out For
- ○ Key Takeaways: The Present and Future of AR/VR in Education
- ○ The (Extended) Reality Check by Cybage

## Abstract

As discussed in Part ONE of this whitepaper series, last few years have accelerated the urgency of answering a rapidly growing call for more engaging learning formats. Technological solutions have been endorsed as the overarching answer to many of the learning-related concerns. But, sustaining students' interest and engagement throughout long-drawn courses in a distance learning setting is a fundamental challenge. Augmented and Virtual Reality (AR & VR) formats offer richer spatial advantages than those of 2D, web-based systems widely used today. Extended Reality (XR) is a promising approach that will add an effective layer to learning while also enhancing motivation among learners. But what will this future actually look like? Part TWO attempts to answer this very question.



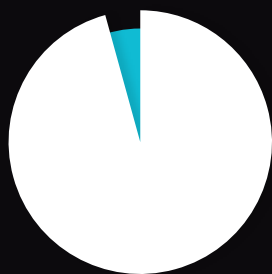
## Distance and Disengagement: Causes for Concern

Parents, students, and teachers alike are expressing growing concerns over attention spans and long-accepted reliance on theoretical education [1]. Even the corporate training world has not been left untouched by these concerns.

The education sector as a whole is fast-moving towards technology-supported learning and training. And with their ability to offer more hands-on training and clearer understanding, XR solutions are presenting rewarding and engaging formats for learners and instructors alike. As discussed in the previous whitepaper, current scenarios and unmet needs of many students are driving a steady shift towards distance learning, powered by learner-friendly technology. This shift will help students learn better and faster, helping teachers become more effective in the future.



## Artificial Intelligence (AI) Meets VR and AR; The Result is Engaged Learning



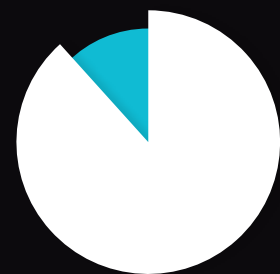
**97%**

of students want to learn using VR/AR.



**67%**

of students feel more motivated with gamified courses.



**90%**

of the material is retained when learned through experience.

XR is the present and the future of education. VR, AR, and AI can generate content for entire curriculums and lesson plans when applied together.

## AI Powers Classroom Gaming

Gamification boosts learning exposure and gives students competency and confidence. AR is especially being explored as a tool for improving vocabulary in learning disabled individuals through gamification. In India, educators have even started using interactive textbooks [2] that utilize 3D images, audio, and video to explain the text.

## AI Makes Virtual Field Trips Possible

AR/VR environments are readily accessible and ensure students can participate fully in activities adapted to their needs using AI. A museum in the US [3] extends a cache of open-access 3D models that allow us to view their artifacts in their physical surroundings on mobile devices.



## AI Enables Simulations

Learning is more helpful when concepts can be put to practical use. AR enables this through simulations of complex processes. In biology, for instance, students learn about cell structures without access to laboratory equipment. Students can view microscopic objects in 3D or stand in the middle of physics and chemistry simulations.

## AI Eliminates Language Barriers

VR, AR, and AI also provide a convenient way to learn foreign languages anywhere and anytime. A more basic example [4] of AI for language learning is already in mainstream use with popular apps. These aspects of AR and AI can be combined to provide an immersive and interactive learning format with a lifelike conversational partner with AR or with simulations of real-world situations.

## Classrooms of the Future: Things to Watch Out For

As Part ONE highlights, the challenges posed in front of AR/VR are many. Along with the focus of Education having shifted from a theoretical level, the distance between learners and instructors has led to a more in-depth exploration of the teaching methods and techniques that leverage AR/VR. And AI has certainly paved the way for overcoming several of these challenges. Using AI in conjunction with AR/VR facilitates learning experiences that use all senses and foster practical, hands-on learning. But beyond AI, the emergence of new technologies will surely pave the way for broader adoption of AR/VR into the Education space.

Many of the things envisioned by early adopters a decade ago are now attainable. In the near future, supplementary tech will dramatically transform the opportunities available within AR and VR:

### 5G

Faster and larger data transfer capacities will significantly increase 3D AR and VR content sharing possibilities.

### Easier Content Creation

Creating content has become more straightforward than ever, making access to significant digital assets widely available.



# Key Takeaways: The Present and Future of AR/VR in Education

## The key players of EdTech's AR/VR revolution [5]

<p><b>Augmented Books</b></p>	<p><b>Corporate Employee Training</b></p>	<p><b>Educational Game Studio</b></p>
<p><b>K-12 Packaged Solution (w/Headset)</b></p>	<p><b>Sports Training</b></p>	<p><b>Research</b></p>
<p><b>K-12 Teacher Tools + Lessons</b></p>	<p><b>Consumer Adult Learning</b></p>	<p><b>Educational VR Platform</b></p>
<p><b>Historical Content</b></p>	<p><b>University Services</b></p> <p><b>Medical Training</b></p>	

AR/VR technologies are promising additions to the "EdTech" domain that offer virtual experiences to mitigate distance barriers.

Although still in their early stages, several promising models of this technology are already utilized for higher education.

AR/VR can equip educators with interactive tools and immersive for classroom learning, especially for students with learning disabilities.

AR/VR can help learners grasp abstract concepts and gain hands-on experience in low-risk virtual settings—improving the quality of STEM and medical courses, along with arts and humanities syllabi.

## The (Extended) Reality Check by Cybage

At Cybage, we recognize that the EdTech platforms can redefine the future of learning by harnessing the power of AR/VR with the integration of Artificial Intelligence. We lean into the mobile revolution to help educators leverage disruption and deliver personalized, interactive, immersive, but realistic learning experiences.

Cybage's AR/VR capabilities can enable educational institutions and EdTech businesses to build and scale complex, customizable XR content on the go. By powering virtual panoramic tours and wearable technology simulators, we strive to empower collaborative learning—filling the gaps in e-learning.

## References

- [1] <https://directorsblog.nih.gov/2018/07/24/study-associates-frequent-digital-media-use-in-teens-with-adhd-symptoms/>
- [2] <http://www.newschools.org/wp-content/uploads/2019/09/Gallup-Ed-Tech-Use-in-Schools-2.pdf>
- [3] <https://www.smithsonianmag.com/blogs/smithsonian-education/2021/06/01/when-physical-world-meets-digital-world-new-realities-emerge/>
- [4] <https://venturebeat.com/2020/08/18/how-duolingo-uses-ai-in-every-part-of-its-app/>
- [5] <https://www.slideshare.net/MercedesBent/top-companies-and-players-in-the-vr-ar-education-space>

