



**A WHITE PAPER ON USING (XR)
EXTENDED REALITY IN
WORKFORCE DEVELOPMENT
AND EMPLOYEE TRAINING**



XR GURU[®]

Immersive Learning Hub

Advancing education and training in the metaverse



A White Paper On Using (XR) Extended Reality in Workforce Development and Employee Training



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Executive Summary

Adequate, impactful training is vital for a successful business, but the workforce is changing, and companies need to adapt their training programs. New generations prefer immediate and/or face-to-face feedback, are motivated by personal growth, and prefer flexible work environments. Therefore, organizations are dealing with a more geographically distributed workforce. All this adds up to a logistical nightmare for HR and learning and development (L&D) teams trying to implement consistent and effective training programs for employees in different locations, age groups, and backgrounds. Integrating Extended Reality (XR) training, which includes Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality technology, into processes can be a great way for companies to recruit and retain workers of all ages and backgrounds. XR training also enables companies to make employee learning more interactive and engaging, which can improve onboarding and retention. Continue reading to learn how to use augmented and virtual reality in training and their benefits.

Because of the Covid-19 pandemic, businesses around the globe are under pressure to reskill and upskill their workforces. Leading companies are now focusing on new ways to train, engage and retain workers. Extended realities (XR) such as Augmented reality (AR) and Virtual reality (VR) have emerged as effective tools to reduce costs, remove distance barriers, improve productivity, enhance learning, and reduce errors across almost every industry.



What is XR?

Extended Reality (XR) is the combination of human & computer-generated graphics interaction, which is in reality as well as the virtual environment. In basic terms, Extended Reality is a superset of immersive computer technologies such as Augmented Reality (AR), Virtual Reality (VR) & Mixed Reality (MR).

Virtual Reality

Virtual Reality (VR) is the term used to describe a three-dimensional, computer generated environment which can be explored and interacted with by a person. That person becomes part of this virtual world or is immersed within this environment and whilst there, is able to manipulate objects or perform a series of actions. Morton Heilig invented the first VR device named the Sensorama in 1962.

A few years later, the concept of Virtual Reality was made popular by VR pioneer Jaron Lanier. Virtual Reality creates a completely computer-generated world which can be interacted with and related to by the user. There is no connection with the physical world in Virtual Reality. While users cannot physically touch any objects in the virtual world, they can interact with virtual objects rendered within the virtual world.

In the past, VR has been primarily associated with the gaming industry. However, advancements in technology, the high level of internet connectivity, and cheap bandwidth have paved a way for its application and acceptably across multiple industries. Virtual Reality's unique value proposition is to educate and entertain users via an interactive and immersive, digital content experience. Though it started with gaming, Virtual Reality has now become a highly acceptable and valuable tool in many industries ranging from Education, Sales & Marketing, Sports, Construction & Engineering, Healthcare, and Teleconferencing, just to name a few.



Augmented Reality

Augmented reality (AR) is an interactive experience of a real-world environment where the objects that reside in the real world are enhanced by computer-generated perceptual information. AR can be defined as a system that incorporates three basic features: a combination of real and virtual worlds, real-time interaction, and accurate 3D registration of virtual and real objects. The overlaid sensory information can be constructive (i.e. additive to the natural environment), or destructive (i.e. masking of the natural environment). This experience is seamlessly interwoven with the physical world such that it is perceived as an immersive aspect of the real environment. In this way, augmented reality alters one's ongoing perception of a real-world environment, whereas virtual reality completely replaces the user's real-world environment with a simulated one.

The uses of Augmented Reality are numerous. With the Covid-19 pandemic and the need to practice social distancing, any means of interaction with objects and humans has been limited. This is where AR shined with its ability to superimpose information on objects in the real world. Some areas where AR can add value while still maintaining social distancing are shopping and retail, travel, education, marketing, manufacturing, infrastructure, print media, and publishing.



Mixed Reality

Mixed or Merged reality (MR) is the merging of real and virtual worlds to produce new environments and visualizations, where physical and digital objects co-exist and interact in real time. Mixed reality does not exclusively take place in either the physical world or virtual world, but is a hybrid of augmented reality and virtual reality. To mark the difference: Augmented reality takes place in the physical world, with information or objects added virtually like an overlay; Virtual Reality immerses a user in a fully virtual world without the intervention of the physical world. Mixed reality extends virtual reality to the real world. A person experiencing mixed reality can visualize 3D objects superimposed on the real world.

Wherever there is a need to simplify a complex concept or theory, there exists a use case for mixed reality. Mixed reality has a lot to offer in industries such as construction and engineering as well as other industries like interior design, where users can interact with their environment in real time.



Why Use XR?

As the need to gain new knowledge grows, skills gaps are widening across industries. With estimates that as much as 35% of the top skills needed in jobs can change on an annual basis and with many companies still using ineffective, traditional learning formats to address this issue, it is time for a change. Fortunately, a number of innovative options have emerged. Many are turning to Extended Reality (XR) solutions such as Augmented Reality (AR) and Virtual Reality (VR). These technologies use computer graphics and wearables to create altered realities for training purposes. Through simulated interactions and scenarios, employees engage in experiential learning. So far, this method has been highly effective in helping employees learn faster and retain knowledge longer.

RESEARCH FINDINGS



According to a recent study by PwC, VR-trained employees completed trainings up to four times faster than classroom learners and one and a half times faster than online learners. The same study found that VR learners were 275% more confident to act on what they had learned during training, which leads to better knowledge retention.

Despite spending an average of \$1,300 per employee annually on training, research shows that learners forget 70% of the content within 24 hours and nearly 90% in a month. Therefore, it is not surprising that over 90% of executives participating in a survey conducted by Accenture agree existing employee training methods need to be more effective for their workforce. XR can bring static concepts to life. VR-based learning taps into the power of interactive, visual 3D models to augment the learning experience. According to a study by Thermopylae, we respond and process visual information at a high rate. The study shows 90% of information transmitted to the brain is visual, and humans process images 60,000 times faster than text.

Using XR for employee training makes the learning experience more enjoyable and engaging for employees. You can also enrich XR training with game elements. For example, a technician may earn achievement points for correctly identifying and fixing an issue with a virtual machine. Immersive experiences usually cause emotional reactions and encourage social learning among employees when they share those reactions. XR tools also enable “learning by doing,” which facilitates the absorption and retention of information.

Use Cases

Not too long ago, the concept of extended reality in business was little more than a gimmick. The idea seemed better suited to a sci-fi movie than a corporate setting, and so, it's little surprise that it was slow to gain traction. But that's changing. What once looked like a pipe dream is now a reality, as many businesses are benefiting from the opportunities provided by extended reality (XR) technology. By embracing XR technology, your company will be able to offer an unrivaled experience that people won't forget. You can create purpose-driven experiences that educate customers, employees, and investors alike. With extended reality at the heart of your business, you can nurture a culture of digital transformation from the inside, using immersive technologies as part of your training, design, and marketing processes. A few use cases follow.

► Training

The advantages of training with XR are becoming increasingly apparent as more and more companies adopt and use it. XR training can be beneficial in manufacturing, healthcare and medicine, oil and gas, and retail, among other industries. Digital twins of workplace settings can be created in VR with interactive 3D models so a trainee can practice without the risk of damaging equipment, loss of resources, slowdowns in production, and personal danger. Because VR engages the sense of proprioception, it harnesses our instinctive spatial understanding of the world around us. Being immersed in a VR environment also means distractions are eliminated and focus is improved. Studies have shown that VR can improve a learner's level of attention and the absorption of knowledge. In addition, the ability to exercise bodily movement can create muscle memory related to the training task.

► Remote Work and Meetings

Remote work is more common than ever, but there is still a need for teams to interact and collaborate with one another. XR collaboration platforms can facilitate meetings among remote colleagues and offer a range of tools that support team collaboration. Being in a virtual space with co-workers improves the sense of being with them and permits breakout or small group meetings. Remote collaboration can also take place in Mixed Reality, and the remote expert function in Augmented Reality is a simple way for two or more individuals to come together for optimal problem solving.

► Medical and Healthcare

The healthcare field has taken a strong lead in the implementation of XR remote solutions to address medical care. Using XR technologies reduces health risks when working with patients and in preventative measures through training. Remote solutions allow medical personnel to practice safely and patients to receive care regardless of their health status or remote location. Virtual collaboration has been used by physicians and nurses in training scenarios, and is increasingly expanded to include real-time collaboration that enables clinicians to share valuable information remotely. Simulations in healthcare permit practice in surgical procedures, as well as in following protocols and improving soft skills with patients.

► Enhance Soft Skills

XR is already an effective tool for teaching hard skills and for job skills simulations, such as a flight simulator to train pilots. But many employees also need to learn soft skills, such as leadership, resilience, and managing through change. AR and VR can help improve employee training simulations on soft skills by delivering realistic human speech, body language, and mannerisms. Train your sales team to promote your products or your support team on how to deal with unhappy customers through VR simulations.



Benefits to Organizations

XR technology engages users with "life-like" simulations where they can practice or learn new skill sets. It can be used to train employees on process-oriented capabilities, as well as behavioral ones. For example, hospitals can use XR to help physicians learn new procedures and develop a better bedside manner. Given today's widening skills gaps and increasingly volatile business markets, companies are making the switch to XR for it is more cost-effective, requires less time, and is more productive than classroom-based seminars or online training modules.

► Reduced Training Time

A number of high-profile companies have had great success using XR for training. Examples include Walmart, which has trained more than 1 million employees in VR and is expanding their XR training programs. Some of Walmart's trainings include soft skills such as dealing with customers. Training Walmart employees on a new piece of equipment in VR reduced the time required from 8 hours to 15 minutes and eliminated the need for trainers to travel to stores to conduct the training. Boeing found that workers trained in Augmented Reality were able to assemble an aircraft wing section in 35% less time than those trained using traditional methods. And the industrial agriculture company AGCO GSI reduced training time by 60%.

► Improved Collaboration

The combination of industrial-grade wearable XR devices, software platforms, and integration with enterprise solutions is being leveraged to enable a new class of collaboration in industrial enterprises. This type of collaboration extends the reach of experts, inspectors, and customers out to the field where the worker is and the work is being done. Organizations using these capabilities have already started to experience shorter turnaround times for doing repairs and maintenance, as well as seeing reduced expenses and time associated with sending experts and inspectors out into the field.

► Streamline Onboarding

Extended reality can put an end to lengthy on-job onboarding programs and training periods. Utilizing XR technology for onboarding and training can significantly reduce the training period as the employees learn faster and retain information longer through immersive learning environments.

► Safe and Cost-effective Training

Adopting AR/VR services is a wonderful way to offer an immersive training experience to your employees. Certain training activities such as heavy machine training and safety drills can be risky and costly to set up. So, incorporating AR/VR services in your training process offers a safe, cost-effective platform to train your employees. With AR/VR technology, you can create "life-like" scenarios and train people to perform critical tasks in a safe environment without the fear of causing harm to one's life, property, or equipment.



Benefits to Employees

Many employers are beginning to use XR tools in their workplaces. Workplace XR is mainly used in training, remote assistance, and collaboration. Some XR tools also help employees customize the way they work. XR tools can enhance work for employees with and without disabilities and create a more inclusive work environment. XR technologies can help employees with and without disabilities receive training, perform their jobs, and enhance their skills.

► Explore Careers with XR

Explore various career opportunities using immersive learning environments and ensure you are on the right path.

► Learn Real Jobs

Gain a more complete and better understanding what a real job is like through authentic simulations.

► Effectively Develop Career Skills

Effectively develop career skills through 3D 360 and 3D animations using immersive learning environments.

► Increase Job Satisfaction

Increase job satisfaction by quickly and easily improving your skills, knowledge, and productivity.

► Career Advancement

Quickly and easily learn new skills to advance your career using immersive learning environments.



What You Need to Know

XR has immense potential as it offers new and exciting ways for learners to interact and engage with subject material. However, there are a few concerns to consider and evaluate prior to adopting XR.



► Privacy Issues

To provide an immersive experience, XR collects extensive biometric data of the users. While this is essential to provide a better experience, it does present a privacy issue.

► Health Concerns

AR/VR offers an engaging and interactive way of training and learning, but immersive technologies pose certain health risks for users. Wearing headsets for long periods of time may cause stress and anxiety, nausea, and eye strain. When learners use them alone, XR devices may even cause injuries by, for example, stumbling over real-world objects.

► Lack of Flexibility

Training with XR can lack the flexibility of traditional training, where employees can give suggestions and ask questions. With XR, it may not always be possible to adapt training in the moment, and learning is restricted by the software.

► Cost

Developing, updating and supporting software and headsets for VR, AR and MR, can be expensive. In addition, there is the cost creating and deploying training content in a 3D environment. As is the case with any financial decision, you should perform a "cost-benefit" analysis.



XR Guru[®]

Adopting XR for workforce training offers about several advantages, such as faster learning, better collaboration, and enhanced employee engagement and retention.

XR Guru is an integrated, immersive learning platform providing career exploration and workforce development modules via smart devices and VR HMDs (Virtual Reality Head Mounted Devices). To know more, visit www.xrguru.com

XR Guru is one of the world's first extended reality platforms tailored towards the needs of employers and employees in multiple industries. XR Guru provides career exploration and workforce development content in Augmented Reality (AR) and Virtual Reality (VR) created to help companies effectively and cost-efficiently recruit, engage, train (e.g., reskill and upskill), and retain workers. Organizations and trainers can use the content in AR/VR to train employees on process-oriented and behavioral capabilities in interactive and engaging ways.

XR Guru is a device agnostic platform designed to be used across Android, iOS, and Oculus Devices with a single XR Guru account. Create an account in one platform and seamlessly sync across platforms.