

# How VR and Immersive Technology are Shaping the Future of Learning and Development

*Research with 100 Learning and Development Executives in North America Reveals How VR is Revolutionizing Training Strategies, Improving Performance, and Creating Immersive Experiences for Staff*





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# Executive Summary

**W**e may be approaching a ‘tipping point’ for enterprise VR training. Hastened by the fallout from the pandemic, learning and development executives were forced to alter their training plans, and pivot to digital delivery in record time.

This research explores the current state of VR in the learning and development space. It provides essential insights into the challenges faced by learning and development professionals as they experiment with VR and other kinds of immersive technology.

With expert commentary from six experts in VR and learning and development, we will investigate how enterprise businesses are incorporating immersive technology into their learning and development strategies.

You’ll also discover how employees are responding to VR initiatives and the effect that VR is having on learning and development outcomes.

What’s more, we’ll take a look at the science behind VR and memory, and see why training programs conducted in VR outperform classroom-based learning. ■

## Key Takeaways: North America

**4.7/10**

Employee engagement for current training programs

**39%**

see gaining organizational buy-in as the number one challenge when building and implementing new learning initiatives

**40%**

rated opportunities for feedback in their training as either ‘neutral’ or ‘not good’

**40%**

have adopted VR for training in their organization

**53%**

said the value of VR for training has been revolutionary

**58%**

said VR had the most potential for ‘high risk’ training

**88%**

said that employees ‘love’, or are ‘completely blown away’ by VR for training

**60%**

had to adjust their training delivery and initiatives as a result of the pandemic

**38%**

of VR users said that adopting VR helped them to meet their budget goals

Source: Corinium Intelligence, 2021

# Methodology

**T**his representative survey of 100 US-based learning and development leaders from retail, manufacturing, healthcare, telecommunications, construction, and aviation industries was conducted in June and July 2021.

84% of respondents come from enterprises with more than 10,000 employees and 64% have a learning and development budget of more than USD 50 Million per year. Respondents' job titles include VPs and Directors of Learning

and Development, HR, Talent, People, Innovation, and Culture.

They were asked 20 questions about their organizations' use of VR, as well as their challenges, plans, and responses of their staff as well as their strategic training priorities in 2021.

We then combined our findings with commentary from six industry experts to put these unique insights into the future of VR and immersive technology for learning and development into context. ■

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## Contributors



**Madison Artist**  
Senior Manager of  
Learning and Talent,  
GoDaddy



**Karen Snyder**  
Lecturer of Digital Media,  
University of Houston



**Walter Davis**  
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**Elias Stephan**  
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**Christopher Lind**  
VP and Chief Learning  
Officer,  
ChenMed



**Carlos Velázquez**  
Global Head of Learning  
Experience Platform,  
Caterpillar





# Is the Pandemic Ushering in a New Age for Learning and Development?

## KEY FINDING

*It's been a turbulent year for learning and development executives, but new initiatives in immersive technology are creating opportunities for engagement*

**T**he pandemic and the resulting changes to ways of working have created challenges for many learning and development executives in the last 12 months.

However, the pandemic has coincided with a period of rapid growth for virtual reality (VR) in the learning and development space. Businesses from a wide variety of sectors are increasingly incorporating VR, augmented reality (AR), and other forms of immersive tech, often referred to collectively as extended reality (XR), into their training programs.

Our survey of 100 US-based learning and development professionals working in organizations with over 1000 employees has revealed that XR and immersive tech has helped many organizations to meet their learning and development objectives while dealing with the practical challenges of remote work. ▶

# 76%

**The percentage of learning and development plans impacted by the pandemic**

Source: Corinium Intelligence, 2021



## The Pandemic Caused Learning and Development Leaders to Shift Gears

More than 60% of the participants in our research said that they have made adjustments to their training and delivery objectives as a result of the pandemic, and a further 16% have undergone a complete overhaul.

From onboarding to high risk and soft skills training, learning and development executives are finding creative ways to improve employee engagement, immersion, and feedback using a blend of digital and XR technologies.

“Our shift was turning into more of a digital coaching organization for the rest of the enterprise because everyone else was freaking out about how to do things digitally,” says Christopher Lind, VP and Chief

Learning Officer at healthcare company ChenMed. “And that’s where immersive tech and some of these new technologies are coming in.”

Walter Davis, Global Head of Talent and Learning Technology for power generator technology company Aggreko, thinks that the effects of the pandemic on businesses have created the need for innovative solutions to some pressing challenges.

“The pandemic definitely enabled a different kind of conversation around how we can accomplish [our goals],” Davis says. “Rather than being stuck in doing things a certain way, I think people were forced to innovate and look at [their plans] with a new lens. We didn’t think we were going to be using [XR] to this volume so soon – but we have, that’s for sure.” ▶

# COVID-19 Created Challenges For Enterprise Learning and Development

On a scale of 1-100, how effective are your current learning and development programs?

73

1 = totally ineffective

100 = absolutely effective

On a scale of 1-100, how engaged are your employees during learning and development programs?

48

1 = no engagement

100 = fully engaged

Source: Corinium Intelligence, 2021





## Creating Opportunities for Employee Engagement

Our research suggests that although learning and development executives are fairly satisfied with the effectiveness of their current programs, there is significant potential to improve employee engagement.

Our survey respondents rated the effectiveness of their current learning and development initiatives at 73 out of 100, while employee engagement was rated at only 48 out of 100.

One method of improving these metrics is to incorporate XR technology and gamification into training programs to create a sense of fun, and drive engagement.

Many learning and development professionals are already experimenting with VR and XR to improve engagement, interactivity, and fun during training programs, even if they have not yet rolled out a full VR training program.

As part of her former role working for a well-known producer of electric vehicles, the current Senior Manager of Learning and Talent for GoDaddy Madison Artist was involved in delivering a pilot VR forklift training experience.

"The initial training was in VR," Artist says. "You have all the controls that you need for the forklift, including the

pedals. You had to navigate around poles and through an obstacle course, and you got a score at the end."

Of course, while the final certification involved work in a physical forklift, being able to do the initial training in VR helped to familiarize the trainees with the basics in a risk-free environment, while also having some fun.

"I think anytime that you can gamify things, that's such a huge opportunity," Artist concludes. "You can make [the training] really fun and engage people in a different way with just a little bit of a gamification element." ■

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*"You can make [the training] really fun and engage people in a different way with just a little bit of a gamification element"*

**Madison Artist**

Senior Manager of Learning and Talent, GoDaddy





# Interview with Elias Stephan



**Elias Stephan**

Global Head of Virtual Reality ISV Partner Program  
HP

## What would you say to an L&D executive who has some experience with immersive technology and wants to take the next step with VR?

A lot of businesses have already invested significantly into VR, of course, but there are many more still on the fence as to whether they want to dive into it. I would really encourage anyone interested in expanding their use of VR to look at case studies and really understand the benefits that VR can offer your business. For example, [a PWC study](#) found that VR outperforms conventional training in many areas, from the focus of the participants to emotional connection and even how fast training can be completed.

## What do you think are some factors that prevent companies from moving into or expanding their use of VR?

Cost is always a factor for any business, regardless of size. But I think it's very important for learning and development practitioners to look beyond the cost and to really analyze the potential for return on investment. I think that it's also important to understand your goals and what you want to achieve with your training programs. Do you want to increase their knowledge retention? Do you want to make your training even more immersive and more fun? Do you want to scale your training programs more cost-effectively? From our experience, VR for learning and development programs can do all of these things.

## What are the biggest advantages of using VR for learning and development programs?

Well, one thing people should look at is studies about the improved retention of information in VR versus non-VR. It also provides you with a level of immersion that it is impossible to replicate outside of in-person, on-the-job training. Another advantage, especially from a business perspective, is the ability to create custom scenarios based on a particular situation. These can help staff to navigate difficult situations, how to get out of them, and helps to prevent panic in an emergency.

## How should companies approach the rollout of VR for learning and development programs?

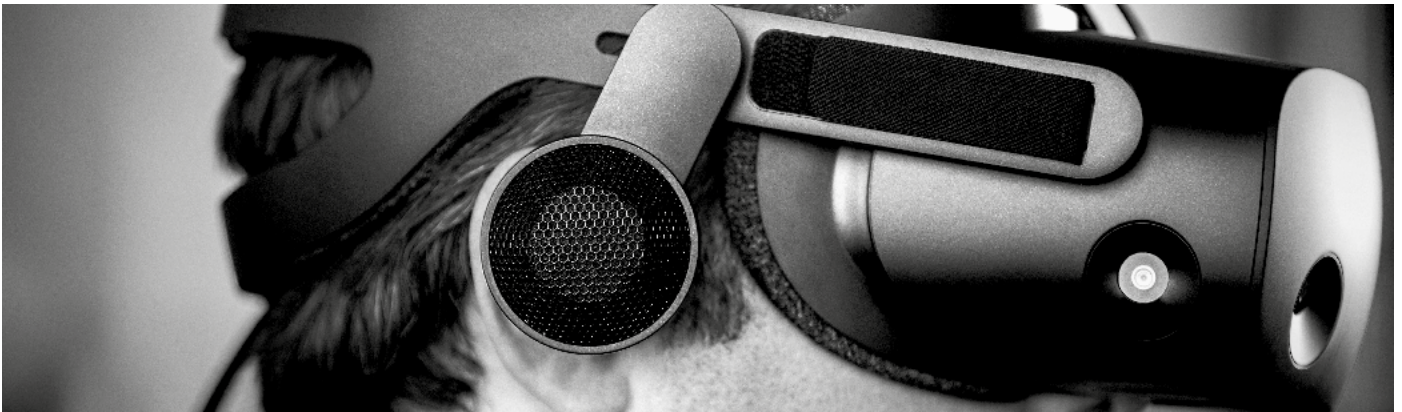
In many ways, it depends on the scale of the rollout. I would advise most companies to start small, although we have plenty of examples of companies today rolling out worldwide programs involving thousands of headsets. Certainly, I would recommend taking it step-by-step. Start by developing a proof of concept, then perhaps deploy a pilot scheme in a few areas. If that is a success, then you can go ahead and roll it out across the company. ■



# Incorporating XR into Successful Learning and Development Initiatives

## KEY FINDING

*With budgets tight and expectations high, learning and development executives are looking to XR to improve the performance of their training programs*



In the face of worsening economic conditions as a result of the pandemic, HR departments faced an average cost reduction of 7% during 2020, according to [a report from Gartner](#).

Our research paints a somewhat mixed picture for North American learning and development budgets in 2021. While a total of 52% of survey respondents report an overall reduction in their budgets, 42% report an increase, with 6% remaining about the same.

How XR-based training fits into budget planning also varies, it seems. While many learning and development executives have found that XR initiatives can help to drive budget efficiency, especially at scale, others are cautious about the potential for large upfront investments in hardware.

Our research suggests that VR is having a positive effect on budgets for those using it. 38% of respondents who have already adopted the

technology found that it has helped them to reduce their training budget. Meanwhile, 26% of the respondents who have not adopted VR reported that it was due to cost.

However, XR specialist and Lecturer of Digital Media at the University of Houston Karen Snyder says that adopting VR for training may also have cost benefits outside of learning and development budgets.

“If you’re in oil and gas, for example, and you’re doing your big rig training. What’s cheaper? Making the risks in your virtual scenario or making them on a big rig where you might have a crash?” she says.

“Then the other side to this has to do with just the physical space. It’s just plain cheaper not to stop the entire production for training purposes,” she continues. “Being in a virtual world allows you more flexibility to create scenarios as you see fit.” ▶

*“It’s just plain cheaper not to stop the entire production for training purposes. So, being in a virtual world allows you more flexibility to create scenarios as you see fit”*

**Karen Snyder**

XR Specialist and Lecturer of Digital Media, University of Houston

## Overcoming Challenges to When Building Learning and Development Initiatives

While cost is a significant factor when planning any new learning and development initiative, our research shows that other factors are more significant. The top three challenges rated by our respondents were time, organizational buy-in, and planning and logistics.

Justifying the time required for training is a challenge for many learning and development initiatives, and especially where staff may be working in high-pressure, time-sensitive environments.

“You have to make it worth it for them,” says GoDaddy Senior Manager of Learning and Talent Madison Artist. “You have to show them that if you step away for 30 minutes, this is going to make you better at working with customers. Which means that you can make more money.”

Achieving organizational buy-in for learning and development initiatives,

especially from senior management, is critical if they are to get off the ground successfully.

For Christopher Lind, VP and Chief Learning Officer at healthcare company ChenMed, storytelling is essential for creating a relatable context for senior leadership that relates to business objectives.

“The whole transformation story was built around a character and we talked about the challenges they’re facing and how we were going to help that person,” Lind says. “So, really carrying

the narrative of this based on the pain points we’d heard from the business leaders.”

During the process, Lind would even de-emphasize mentioning specific technologies and instead focus on tangible benefits.

“I don’t think we even use the words ‘virtual reality’, Lind recalls. We talked about how we would be democratizing opportunities for people to practice, and be able to scale and provide feedback at different levels.” ▶

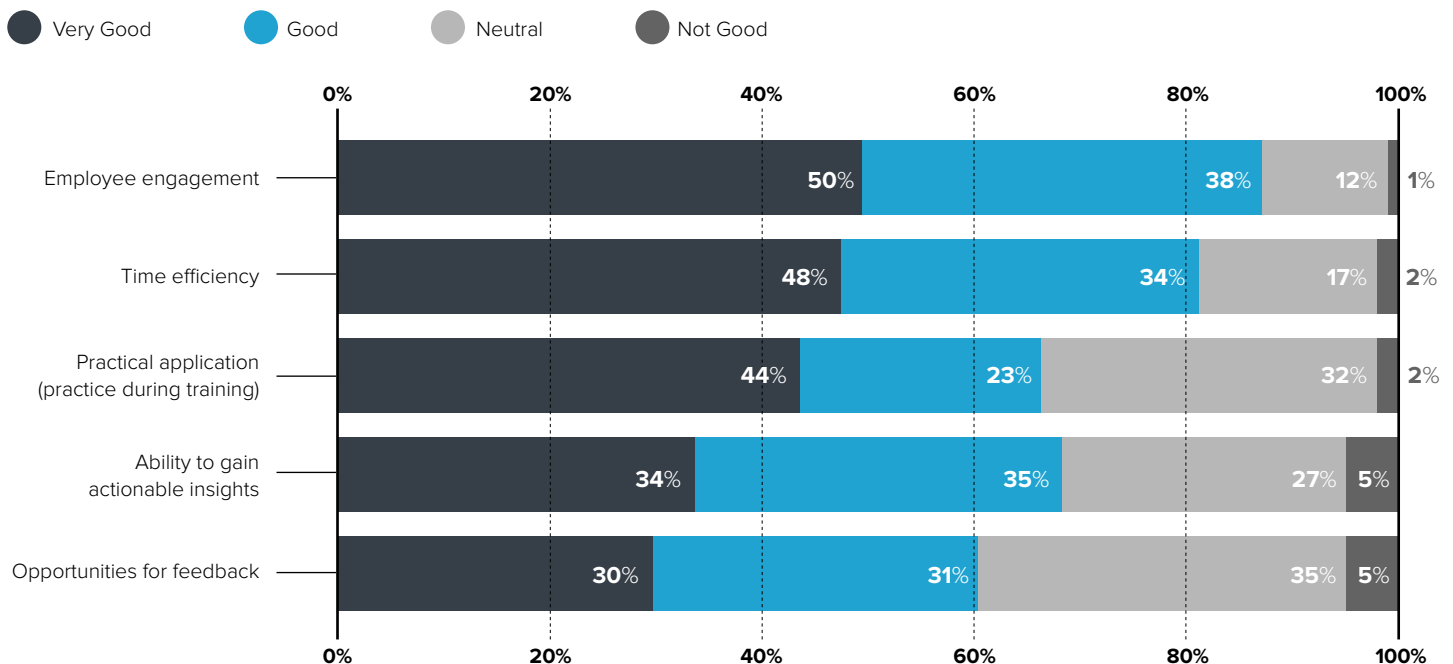
*“You have to show them that if you step away for 30 minutes, this is going to make you better at working with customers. Which means that you can make more money”*

**Madison Artist**

Senior Manager of Learning and Talent, GoDaddy

## Learning and Development Initiatives Could be More Effective

Please rate the following in terms of the effectiveness of your current learning and development initiatives



Source: Corinium Intelligence, 2021

## Improving the Effectiveness of Key Training Priorities

The most effective key training objectives according to our research are employee engagement (87%) and time efficiency (81%), rated at either 'very good' or 'good'.

However, the research also hints at two key areas where learning and development professionals would like to improve. Respondents rated their ability to gain actionable insights (32%), and opportunities for feedback (40%) as either 'neutral' or 'not good'.

As learning and development executives incorporate more XR into their training programs they can harvest more data. However, creating actionable insights from that data can

be a challenge, as Carlos Velázquez, Global Head of Learning Experience Platform at Caterpillar found.

"[In our] first workshops, we had a lot of qualitative data but it was too much. And when we started to only look at highlights we were missing a lot of the detail," Velázquez says. "I think now we are getting close to where we can connect the data in the system to the feedback from the coaches to really understand what the data is telling us."

As learning and development executives incorporate more XR and immersive technology into their training programs, making sense of the data in context will be key to evaluating effectiveness, and generating actionable insights. ■

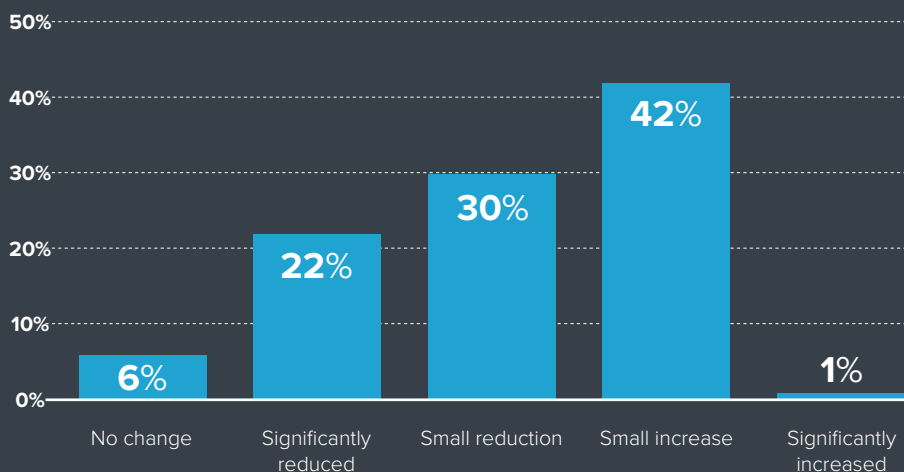
*"I think now we are getting close to where we can connect the data in the system to the feedback from the coaches to really understand what the data is telling us"*

**Carlos Velázquez**

Global Head of Learning Experience Platform, Caterpillar

## Many Corporate Learning Teams Face Shrinking Budgets

Which of the following best describes your budget for learning and development over the past 12 months and next 12? (select one)



Source: Corinium Intelligence, 2021

## Learning and Development Leaders Face Many Challenges

What are your biggest challenges when building and implementing new learning initiatives? (1= Least challenging 6= Most challenging)



Source: Corinium Intelligence, 2021

# The State of VR for Learning and Development

## KEY FINDING

*While many businesses have not yet adopted VR for training, many others are experimenting with the technology. And the reaction from employees is overwhelmingly positive*



**A**t the outset of the pandemic, many businesses rapidly pivoted to remote work. As the pandemic recedes, hybrid working models are likely here to stay for many organizations, hastening the shift away from desktop learning and creating new opportunities for VR and immersive technology.

Businesses in sectors like defense and aerospace have been using versions of VR for training for decades. Today, advances in technology and increasing affordability mean that immersive technology is being used more widely in learning and development programs.

The expansion of VR into areas like soft-skills and diversity and inclusion training allows staff to mimic real-life work situations in a safe repeatable environment. Modeling social scenarios in this way gives

participants the chance to experience a reality other than their own. It also allows them to review their behavior, and assess how it might have been perceived by someone else.

“You can use eye tracking to see how they are behaving as well as voice recognition – how is their voice changing in relation to their proximity to another person, or the words that are being used,” says Karen Snyder,

Lecturer of Digital Media at University of Houston. “These real-world scenarios allow participants to go back and check their responses and the way that they’re navigating them.”

She continues: “The good thing with [VR] is the ability to track this. When you actually start seeing empirical data it’s very different to just looking over their shoulder and grading them.” ▶

*“The good thing with [VR] is the ability to track this. When you actually start seeing empirical data it’s very different to just looking over their shoulder and grading them”*

**Karen Snyder**

XR Specialist and Lecturer of Digital Media, University of Houston



## Barriers to Adoption of VR for Training

Our research suggests that while some enterprise businesses have adopted VR for training in some capacity, many organizations are still in the early stages.

40% of respondents to our research said that they have adopted VR for training in their organization. However, only 20% reported that there was mass adoption of VR technology in their industry.

Of those who have not yet adopted VR, respondents report a mix of reasons. 31% are satisfied with the status quo, 26% say that adopting VR is too expensive, and 26% say that it is too complicated.

However, as VR technology develops and becomes cheaper, complexity and price will likely become less of an obstacle to adoption for enterprise businesses.

"I think that once you get to a point where you're able to use an untethered all-in-one headset without the PC, then I think the technology becomes more pervasive," says Elias

*"The tech maturity has definitely helped. The cost has come down significantly, and the democratization of design software, [means] your instructional designers can create VR experiences"*

**Christopher Lind**

Chief Learning Officer, ChenMed

Stephan, Global Head of Virtual Reality ISV Partner Program at HP. "This will make it much easier for users, and that's going to be a huge difference in deploying enterprise VR for learning and development."

ChenMed Chief Learning Officer Christopher Lind agrees: "The tech maturity has definitely helped. The cost has come down significantly, and the democratization of design software, [means] your instructional designers can create VR experiences."

## How Employees Respond to VR for Training

However, there is still plenty of work to be done before VR and immersive technology can become truly mainstream, Lind thinks. There are many misconceptions and even some confusion about what the technology is.

"There's a lot of skepticism [about VR]. A lot of people's hesitancy is that they've had bad experiences, or they have a perception of what immersive tech is like, maybe their kid's a gamer," Lind says.

In Lind's experience, countering these perceptions is all about creating opportunities for the workforce to see the technology in action, and experience its benefits.

"You've just got to figure out how to get them to that point where there's enough of an interest that you can get them to try it," Lind says. "Because once they do, assuming you've done it right, nobody looks back and says, 'no, I don't really think that was helpful.'"

Our research shows that VR for training is extremely popular amongst staff. Of those who have adopted VR for training, 70% of respondents said their teams either 'loved it', or were 'completely blown away'.

"My experience is that many staff grow to see VR as part of their professional development as a real benefit of their employment," says Elias Stephan, Global Head of Virtual Reality ISV Partner Program at HP. "It really can become a selling point for the business." ■





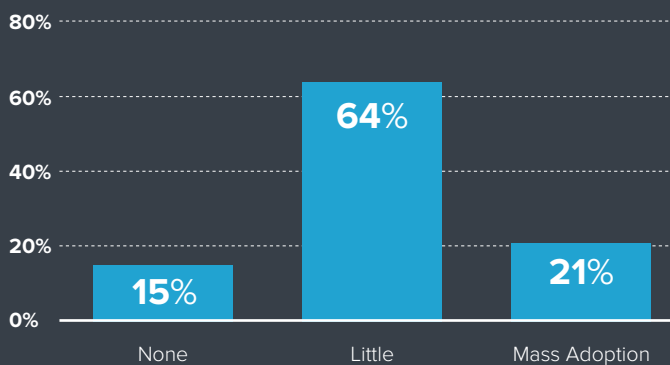
# VR is Revolutionizing Learning and Development for Early Adopters

## KEY FINDING

*While VR technology is still underutilized in corporate settings, all the VR adopters our survey identified said it has improved their learning and development initiatives*

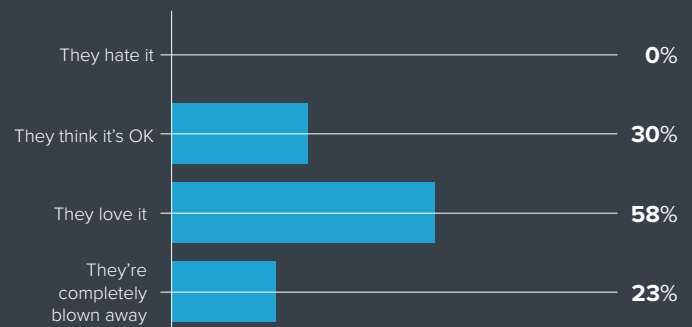
### Enterprises are Starting to Experiment with VR

In your industry, how much adoption is there of VR for training?



### Staff Find VR Training Highly Engaging

Generally, how receptive have your employees been to VR for training?



**53%**

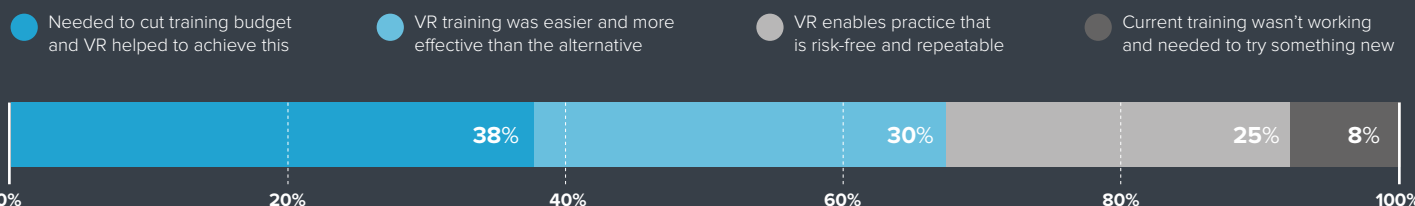
of VR adopters say the technology has yielded **incremental improvements** for their learning and development initiatives

**47%**

of VR adopters say the technology has been **revolutionary** for their learning and development initiatives

### VR has Many Advantages Over Traditional Learning Mediums

If you have adopted VR for training, why?



Source: Corinium Intelligence, 2021



# Charting the Future of VR in Learning and Development

## KEY FINDING

*As the cost of VR technology falls, more enterprises will seek to take advantage of its improved performance over classroom-based learning*

In 1965, Gordon Moore, co-founder and former Intel CEO, posited in his [eponymous law](#) that the number of transistors on a microchip would double every two years, while the cost of computers would half.

More than 55 years later, his prediction, while technically inaccurate, still successfully describes the blistering pace of technological advancement and reducing costs in the industry.

Innovations in technology seem poised to once again revolutionize the way we live, from AI to the Internet of Things, and of course VR. In fact, in its recent earnings call, Microsoft CEO Satya Nadella predicted the future convergence of the digital and

physical worlds.

“As the digital and physical worlds converge, we are leading in a new layer of the infrastructure stack, the enterprise metaverse,” Nadella said.

Of course, the ability to conduct interviews or training in a ‘metaverse’ environment would be revolutionary for the learning and development programs. However, we need not look so far into the future to see the effect that VR is having on learning and development outcomes for enterprise businesses.

Our research shows that 53% of companies that have already adopted VR for training think its effect on learning outcomes has been revolutionary. A

further 47% report that it has helped them make incremental improvements.

“Technologies like automatic inference engines, artificial intelligence, and VR are going to drive phenomenal, innovative applications in the future,” says HP Global Head of Virtual Reality ISV Partner Program Elias Stephan. “Whether learning and development adopt it today or in the future, I think it’s going to happen.”

He concludes: “There are lots of studies on how training in VR amplifies learning versus computer-based training, and it’s going to move forward with more physiological data collected to provide ROI and help staff retain that training better.” ▶

*“Technologies like automatic inference engines, artificial intelligence, and VR are going to drive phenomenal, innovative applications in the future”*

**Elias Stephan**

Global Head of Virtual Reality ISV Partner Program, HP

### The Science of Learning with VR

VR in training has become more widespread over the last 15 years. During that time, [multiple academic studies](#) have shown that it outperforms conventional training methods in terms of information retention and job performance.

For example, surgeons trained with VR made six times fewer mistakes and performed 29% faster than those trained using conventional methods, according to a [joint study](#) by Yale University School of Medicine and Queen’s University Belfast.

According to Karen Snyder, Lecturer of Digital Media at the University of Houston, these performance advantages are explained by the way that the brain stores and accesses memories.

“[When learning] we speak and use our words first and foremost. But when we add in visuals, that’s a whole different way of lighting up the brain and another way of

receiving information,” Snyder says. “Then of course we have sound, what we can hear, and touch — our haptic feedback. And all of these start building up so that more and more of our neurons are firing.”

“So, what helps you to not be bored?” she continues. “It’s a good chemical rush that is packaged, generally, with more than one touchpoint coming at you. And when that happens, it helps you to retain memories for longer.”

Snyder concludes: “This is the same with training when we do it correctly, it’s not just the facts. It’s not just leveraging the sensory feedback. It’s also the steps, the outcomes, and the story itself being told that is so important to being able to facilitate that longer-term experience and then reaping the benefits.” ▶

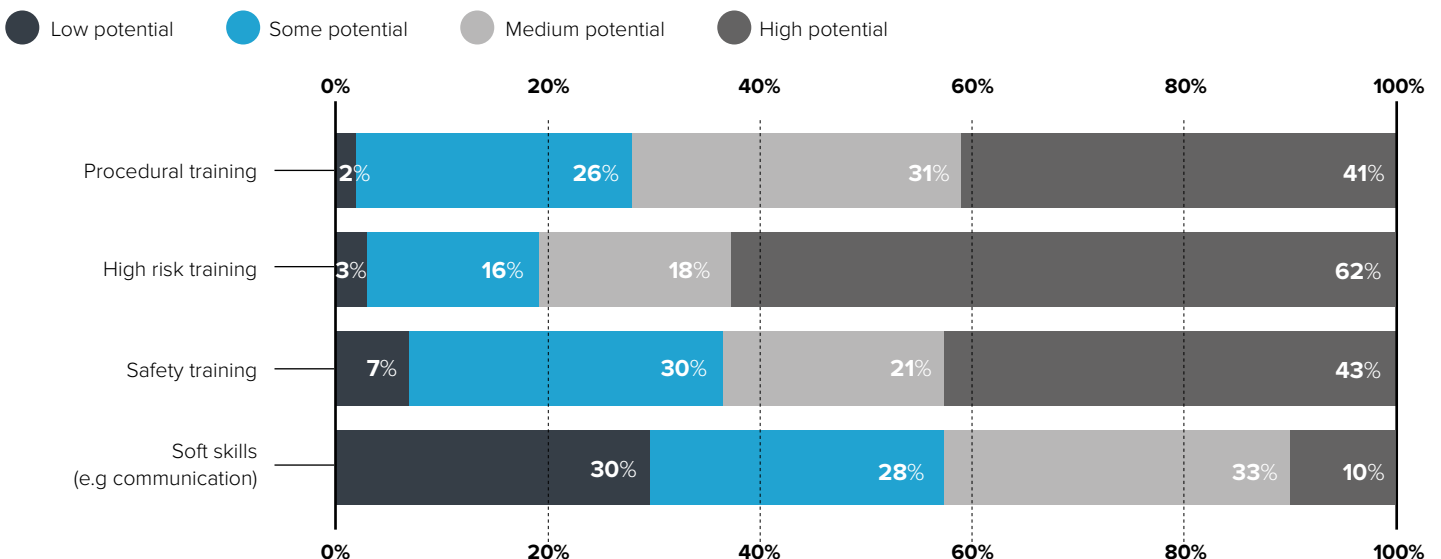
*“What helps you to not be bored? It’s a good chemical rush that is packaged, generally, with more than one touchpoint coming at you. And when that happens, it helps you to retain memories for longer”*

**Karen Snyder**

Lecturer of Digital Media, University of Houston

### VR Can Help When Real-World Training is Impractical

Please rate the following in terms of their potential for effective VR use in your industry or organization



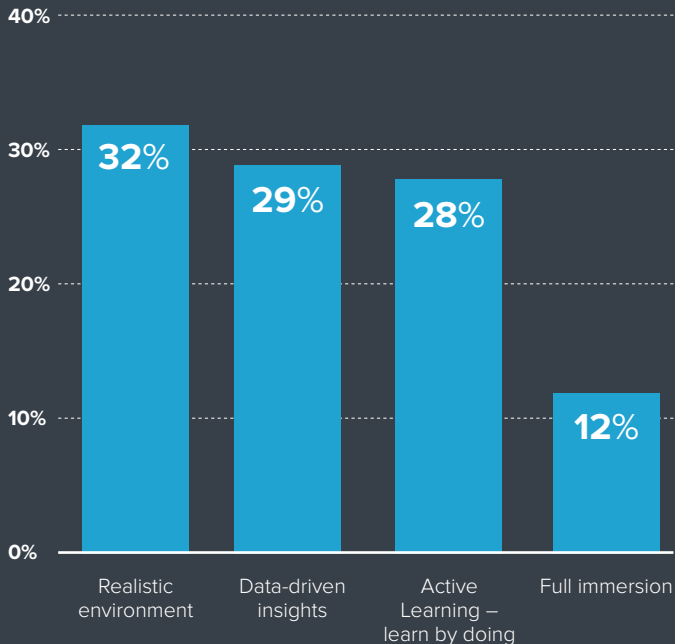
Figures may not add up to 100% due to rounding. Source: Corinium Intelligence, 2021





## VR Promises to Simulate Realistic Environments

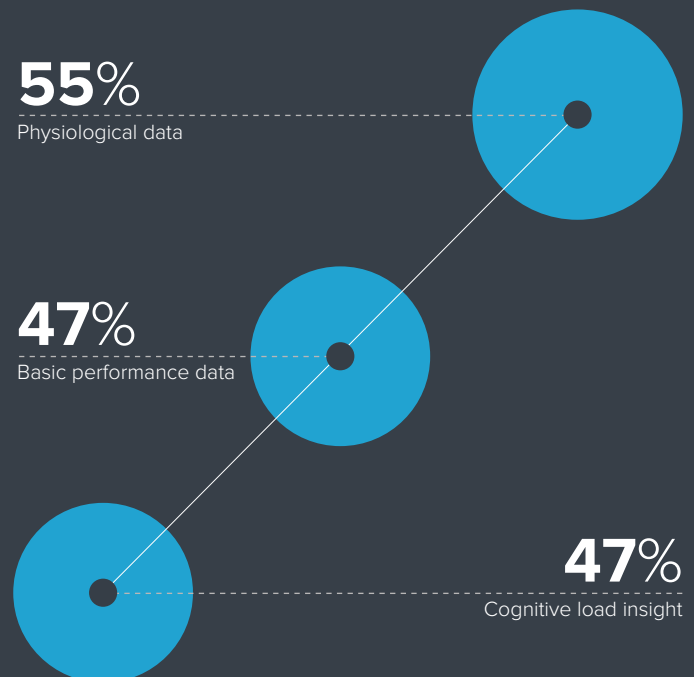
Which of the following is most appealing about VR for training?  
(Select one)



Source: Corinium Intelligence, 2021

## Data-Driven Insights May Improve Learning Outcomes

What type of data and analytics would be helpful for you in improving learning outcomes? (Select all that apply)



Source: Corinium Intelligence, 2021

### Reinforcing Learning with Data

As we discussed earlier, learning and development executives feel at best neutral about their ability to generate feedback from their current training programs.

Our research also shows that more feedback data would be useful for learning and development executives to improve the outcomes of their training programs. This data includes performance data, and physiological data, as well as information on cognitive load.

Cognitive load measures mental strain or arousal by combining readings from physical metrics. These may include pupil dilation, heart and respiratory rates or head tilt. This information can help instructional designers to create experiences in VR that will maximize memory retention while not overwhelming the trainee.

While VR adoption is still in its early stages for many companies, some organizations have begun to experiment with designing experiences

based on cognitive load, as well as other types of biometric data.

“I’ve done some experiments where we use biometric data to be able to see how hard we are stressing someone, and how we can adapt an environment based on a person’s stress response,” says ChenMed VP and Chief Learning Officer Christopher Lind. “The possibilities for measurement are huge because you can pair some of this tech with a lot of different things.”

He concludes: “From a data standpoint, the potential is unlimited. That’s the exciting thing. And in some

ways, it’s almost terrifying because I would say the readiness and maturity of most organizations to even handle the kind of data we can capture is not where it needs to be.”

Ultimately, learning and development organizations may have some way to go before they can fully benefit from the improved performance and enhanced feedback offered by VR technology.

However, given its proven performance advantages, scalability, and popularity, it seems likely that VR will play an important role in the future of learning and development programs. ■

*“From a data standpoint, the potential is unlimited. That’s the exciting thing. And in some ways, it’s almost terrifying”*

**Christopher Lind**

Chief Learning Officer, ChenMed



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Gareth Becker is an experienced editor and content marketer and produces B2B stories that focus on emergent trends in data and analytics, cloud computing, information security and more.

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