Making Sense of Immersive XR **Learning in Higher Education**

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TABLE OF CONTENTS

INTRODUCTION

Extended Reality (XR) technologies are no longer experimental in higher education. Virtual Reality (VR) is placing students inside fully digital environments using head-mounted displays. Augmented Reality (AR) is being integrated into existing lessons to layer digital content onto physical materials using phones. Mixed Reality (MR) is allowing students to interact with 3D digital content directly within the physical classroom while remaining visually connected with teachers and peers.

Across a growing number of institutions, immersive learning is being used to train nursing students in clinical decision-making, prepare workers for hazardous environments, and give students hands-on experience with scenarios that are too expensive, too dangerous, or too logistically complex to replicate in a traditional classroom.

The evidence from these early implementations is encouraging. In one statewide initiative spanning nine higher education institutions, more than 6,600 immersive learning sessions were delivered across two academic semesters, reaching nearly 2,800 students. *(SIL, 2025)* Ninety-eight percent of faculty who used XR in their teaching continued to do so after the program concluded. Independent economic analysis of that same initiative found a 690 percent return on investment.[1]

At the same time, higher education itself is changing in ways that create new demand for what immersive technology offers. More students are learning remotely or in hybrid formats. Employer demand for technical career readiness is accelerating. Institutions are under increasing pressure to demonstrate that their programs produce workforce-aligned outcomes.[2] These are not future trends—they are current realities reshaping how institutions think about instruction, access, and return on investment.

> **This paper is a companion to XRA's "Making Sense of Immersive XR Learning in Secondary Instruction."[3]** Where that paper addresses when and why a teacher should use XR in a lesson, this paper addresses a different question: as higher education evolves, how can institutions use immersive technology to meet these new realities effectively and sustainably?

The opportunity is clear. XR can help institutions deliver simulation-based training at scale, provide consistent experiential learning across locations, and prepare students for careers that demand hands-on technical skills. But realizing this potential requires more than purchasing headsets and other XR devices. Higher education operates within complex environments with multi-stakeholder governance, accreditation requirements, procurement cycles, and cross-institutional coordination that demand intentional, structured approaches to implementation.

1 Center for Business and Economic Analysis (CBEA), "Evaluating the Return in Investment (ROI) for the Wyoming Innovation Partnership (WIP) Initiative," University of Wyoming – WIP ROI Report, 2024. (https://wyoleg.gov/InterimCommittee/2025/04-2025052811-08_WIPROIexecsummary7-15-2024.pdf)

2 Camhi, Tiffany and Cory Turner. "Under a new federal rule, colleges must leave grads better off or lose financial aid," NPR, July 9th, 2026.(https://www.npr.org/transcripts/nx-s1-5835631)

3 XR Association. "Making Sense of Immersive Learning in Secondary Instruction," 2026.

This paper draws on operational evidence from early multi-institution deployments, published research, and data contributed by XRA member organizations to offer institutional leaders a practical, evidence-based guide. It is product-agnostic and focused on transferable principles: what works, what doesn't, and what the path from interest to sustainable implementation actually looks like.

WHERE IMMERSIVE LEARNING IS PROVING ITS VALUE

Immersive XR is not equally effective for all instructional purposes. Research and early implementation data consistently show that XR delivers the strongest outcomes in specific categories of higher education instruction. Particularly those involving technical career preparation and workforce-aligned skill development.

TECHNICAL CAREER PREPARATION AND WORKFORCE TRAINING

Compelling evidence for XR in higher education comes from programs that prepare students for technical careers. These include clinical healthcare, skilled trades and industrial operations, workplace safety, and applied technical skills. What these programs share is a common instructional challenge: students need repeatable, high-fidelity practice in scenarios that are expensive, dangerous, or logistically difficult to replicate in the physical world.

Clinical simulation has emerged as one of the strongest use cases. Nursing programs using immersive VR simulation to allow students to practice patient assessment, clinical decision-making, and emergency response in realistic environments without the scheduling constraints and costs of physical simulation labs. A nursing faculty at Central College in Wyoming, integrated VR simulation directly into their curricula, with usage evolving from optional exploration in the first semester to required coursework by the second.[4] At the University of Nebraska Medical Center College of Nursing, nursing students start using immersive technology in their freshman year.[5] Practicing with virtual and augmented reality software designed by fellow students, aspiring clinicians acquire crucial technical skills in simulated training environments that help ease the transition into the workplace.

A case study on a UNMC virtual reality game titled Journey Through the Kidney analyzed how VR can support anatomy and physiology teaching through immersive navigation, interactive checkpoints, particle visualization, and game based assessment.[6] The study showed that VR integration can

4 Chocolate Milk & Donuts. "Scaling Immersive Learning Across Wyoming, Spring 2025 Impact Report," Sept. 2025. (http://chocolatemilkdonuts.com/resources/statewide-immersive-technology-model)

5 Simpson, Kalani. "New pipeline will develop virtual reality for medical education," University of Nebraska Medical Center, Newsroom, April 8th, 2024. https://www.unmc.edu/newsroom/2024/04/08/new-pipeline-will-develop-virtual-reality-for-medical-education/

6 Ganesan, Adarsha. "A Comprehensive Analysis of Virtual Reality in Modern Healthcare Education," University of Nebraska–Lincoln, May 13th, 2025.

support long term learning and retention by increasing student motivation and engagement, while remaining economical through low retention costs after the initial integration into the curriculum and regular use. Software like Journey Through the Kidney prepare students for real-world healthcare scenarios through practice in safe, repeatable environments.

Workforce safety training represents another high-impact category. Mining safety training, industrial operations, first responder and hazardous environment preparation all benefit from immersive simulation's ability to expose students to high-risk scenarios without real-world consequences. These programs align directly with employer demand and regulatory requirements, making the case for XR investment particularly clear.

Madison Area Technical College, in Wisconsin, is integrating XR into the classroom, allowing students to gain hands-on experience in virtual environments. Using VR, students training in emergency services examine patients and practice making life-saving decisions in low stakes environments, while those planning to work in HVAC can work with dangerous chemicals and machinery completely risk-free. The college has also opened an XR center where students work in VR and AR scenarios and receive feedback from professors while testing new applications of XR technology for future integration and expansion.

At Savannah Technical College, in Georgia, they are working to integrate hands-on technical training simulations into their curriculum, helping students gain technical experience to secure employment after graduation. Through the Pathways Home program, Savannah Tech is additionally serving incarcerated persons through an XR-enhanced community re-entry program, focusing on work readiness, counseling, and providing other transitional services to ensure a smooth reintegration into the workforce post-release.

XR helps to increase the technological capacity of community colleges and enhance skill development while expanding academic accessibility.

EXPANDING ACCESS THROUGH IMMERSIVE CAREER EXPLORATION & INCLUSIVE WORKFORCE DEVELOPMENT

Bismarck State College (BSC) in Bismarck, North Dakota has demonstrated how immersive technology can extend career exploration opportunities far beyond traditional campus and classroom boundaries. Through its Extended Reality for Vocational Rehabilitation (XR for VR) initiative, BSC has leveraged immersive career experiences to introduce adults and students with disabilities to real-world careers and industry environments in their home state. By integrating virtual reality and web-based career exploration into outreach and programming, BSC is helping residents become aware of high-demand opportunities available across North Dakota and aligning them with companies that would be a good fit. As Shannon Coulter, XR for VR Project Director, explains, "At Bismarck State College, XR for VR is leveraging immersive technologies to transform how individuals with disabilities explore careers, creating accessible, real-world experiences that build confidence, expand opportunities, and open pathways to meaningful employment."

BSC's work also highlights how immersive media can support more inclusive workforce development. In partnership with CareerViewXR and North Dakota Assistive, the college developed an interactive web-based experience focused on assistive technology and workplace accommodations. The experience helps employers understand how simple tools, adaptive technologies, and inclusive practices can improve productivity and accessibility for all employees, not just those with disabilities. Building on this effort, BSC is collaborating with local employers that actively practice inclusive hiring to create immersive experiences showcasing successful workplace integration and career opportunities for individuals with disabilities. These experiences are designed to help employers see that hiring from this often-underutilized talent pool is both practical and beneficial for organizations seeking to strengthen their workforce.

Other institutions are also taking advantage of the power of immersive career exploration. Daytona State College in Florida has incorporated immersive field trips to expand student access to real-world career exposure and help them make more informed decisions about their future. Coastal Bend College in Texas is also leveraging the same experiences to connect their learners with potential pathways. Together, these implementations demonstrate how higher education institutions can use immersive technology not only for career exploration, but also as a scalable tool for workforce engagement and inclusive economic development.

BROAD-ACCESS EXPERIENTIAL LEARNING

Not all immersive learning in higher education needs to be program-specific. Library-based and open-access models have proven effective as a foundational access layer, enabling cross-disciplinary exploration with low barriers to entry. These models provide a central location for learners and educators to try the technology and catalogs of evaluated experiences, often rated or sorted for various curriculum needs. Library-hosted VR programs have introduced students across disciplines to immersive experiences—from soft-skills development and career exploration to virtual campus tours and cultural experiences—without requiring integration into any specific curriculum.

These broad-access programs serve an important strategic function. They build institutional familiarity with XR technology, generate faculty interest organically, and provide a low-risk environment for students and staff to develop comfort with immersive tools before encountering them in structured coursework.

A LIBRARY-BASED SOLUTION

Mary Ann Mavrinac Studio X is the library-based hub for Extended Reality at the University of Rochester (UR). Students, faculty, and researchers across disciplines are connected through this shared XR space which provides equipment and expertise. Studio X also partners with campus researchers to create new XR projects. Some examples include a collaboration with URMC's Motion Labs which explores XR in physical therapy and Aurum VR, which brought a medieval alchemical manuscript to life in partnership with UR's Robbins Library.

Studio X cultivates community through programming that reaches across the university. One example is the Voices of XR speaker series, which features researchers exploring a wide range of topics from VR user representation, to teaching physics in AR, to recreating Tokyo Benshi film theaters in VR. Studio X also provides hands-on XR development workshops to partnered courses, empowering students to create their own XR experiences and solutions.

At the University of Rochester, Studio X's space, equipment, and expertise allows XR to become a shared language for discovery across the entire university.

THE DICE FRAMEWORK, EXTENDED

XRA's secondary education paper introduced the DICE framework as a practical lens for evaluating when immersive XR strengthens instruction.[7] The framework asks whether the learning objective involves something Dangerous, Impossible, Counterproductive, or Expensive to replicate in the real world. If the answer is yes, XR is likely a strong fit.

DICE remains a useful starting point for higher education. However, institutional leaders making investment decisions need to weigh additional factors beyond individual lesson planning. At the institutional level, the evaluation also needs to consider:

7 XR Association, 2026

- **Workforce alignment:** whether a use case connects to employer-demanded skills and career pathways;
- **Scalability potential:** whether the application can serve multiple programs, campuses, or student populations;
- **Measurable return on investment:** whether outcomes can be documented in terms that resonate with administrators, accreditors, and funders.

> **DICE is not a checklist for adding technology; it is a clarity tool for matching modality to purpose.** For institutional decision-making, pair DICE with questions about workforce alignment, scalability, and measurable ROI. The stronger the alignment across all of these dimensions, the stronger the case for investment.

CHOOSING THE RIGHT MODALITY

The secondary education paper presents VR, MR, and AR as a menu of options for classroom instruction. For institutional leaders making investment decisions in higher education, the reality is more nuanced. Not all modalities are equally ready for institutional-scale deployment, and an honest assessment of the current landscape is essential to sound planning.

VR: PROVEN AND DEPLOYABLE

Virtual reality (fully immersive, headset-based experience), is the modality with the strongest evidence base and the most mature ecosystem for higher education. Standalone VR headsets have reached a price point, reliability level, and content maturity that supports institutional-scale deployment. The use cases with strong outcomes, like clinical simulation, workforce safety training, and technical skills practice, are currently VR applications that require full environmental immersion.

Device management, deployment workflows, and support models for VR in institutional settings are increasingly well-understood. Early implementations have documented best practices for everything from mobile device management and provisioning to maintenance schedules and help desk integration. For institutions considering their first investment in immersive technology, VR offers the most proven pathway.

AR AND MR: EMERGING, ALMOST INSTITUTIONAL-READY

Augmented reality and mixed reality hold long-term promise for higher education. Lab augmentation, fieldwork overlay, and architectural visualization are among the applications that could eventually benefit from spatial computing technologies. However, institutional-scale deployment may be a challenge as these technologies are still evolving in the market and significant advancements in weight and performance for devices are still improving.

Augmented and mixed reality wearables are at a meaningful inflection point. As artificial intelligence becomes increasingly embedded in professional workflows and daily life, spatial computing is emerging as its most natural interface — one that layers intelligent, context-aware assistance directly onto the physical world in real time. Next-generation AR and MR devices are being built with precisely this vision in mind, and the convergence of AI capability and spatial display is rapidly creating the conditions for these modalities to become genuinely transformative tools for instruction, fieldwork, and technical training in ways that earlier hardware generations could not support.

A ROADMAP TO IMPLEMENTATION

The most common misconception about immersive technology in higher education is that access alone drives success, when success actually hinges on people, process, and content. Whether an institution is deploying XR for the first time or trying to expand beyond an initial experiment, the same structural challenges arise: stakeholder misalignment, infrastructure gaps, insufficient training, and lack of sustained support. Distributing hardware without building systems around it has consistently resulted in underutilization, inconsistent experiences, and wasted investment—whether the deployment involves ten headsets or five hundred.

Institutions that have achieved sustainable, meaningful integration of immersive learning share a common pattern. They treat implementation as a system design challenge, not a technology purchase. The evidence from multi-institution deployments points to five interconnected layers that, together, form the architecture of successful implementation.

FIVE SYSTEM LAYERS

Strategic alignment ensures that immersive learning initiatives connect to institutional priorities, workforce needs, and measurable goals from the outset. Without this alignment, programs struggle to secure sustained support and risk becoming isolated experiments rather than institutional capabilities.

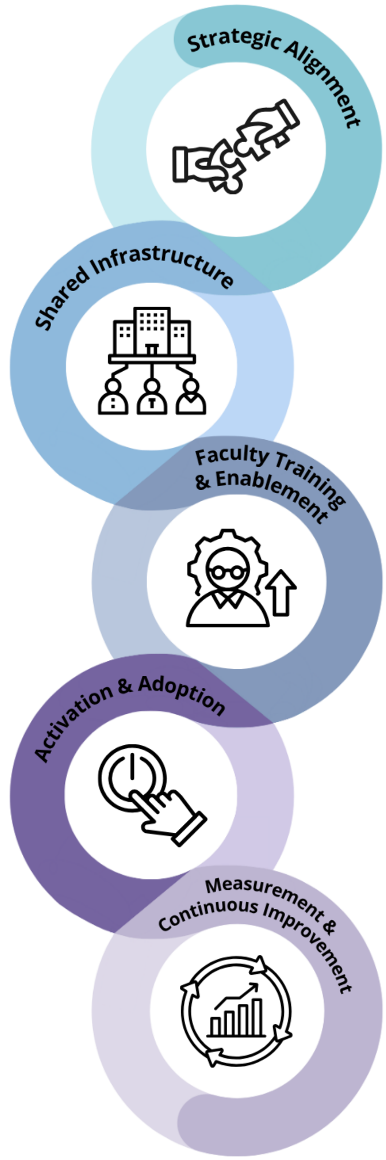
Shared infrastructure extends well beyond headsets. Successful implementations build standardized hardware deployment, curated platform ecosystems, centralized resource repositories, and coordinated device management. The goal is to reduce friction and enable consistent, repeatable experiences across programs and locations.

Faculty training and enablement is not a support function—it is a primary system layer. Without structured enablement, infrastructure investments fail to translate into classroom use. This has been the single most consistent finding across early higher education implementations. Effective training is multi-track, hands-on, and continuous rather than one-time. In one statewide initiative, a combination of immersive technology conferences, on-site bootcamps, and ongoing technical support produced a 98 percent faculty reuse rate—meaning virtually every faculty member who used XR once continued using it.

Activation and adoption must be actively engineered. A common assumption is that once infrastructure and training are in place, adoption will follow organically. Evidence consistently shows otherwise. On-site engagement, stakeholder-specific outreach, structured first-use support, and intentional change management are all necessary. The first experience a faculty member has with XR often determines whether they become a champion or a skeptic. A successful deployment will have continuous adoption, activation and usage cycles.

Measurement and continuous improvement provide the feedback loops that enable everything else. Without structured measurement, institutions lack visibility into what is working, what is not, and where to invest next. The gold standard for efficacy measurement is a controlled study where existing teaching methods are compared to new XR enabled teaching methods. Alternately, programs can be effective using collect usage data, faculty experience feedback, and student outcome measures across semesters, enabling iterative refinement. In one two-semester implementation, this measurement-driven approach produced a visible evolution: optional use became required integration, individual experimentation became structured classroom implementation, and exploration became curriculum delivery.

> **These five layers are interdependent.** Infrastructure decisions shape training needs. Training quality drives adoption. Adoption generates the data that enables measurement. And measurement informs the next round of strategic decisions. Institutions that build all five layers in coordination consistently outperform those that invest in technology alone.



A MATURITY MODEL FOR INSTITUTIONAL PROGRESS

Not every institution needs to begin at the same place. But every institution benefits from understanding where it currently sits and what the path forward looks like. A four-level maturity model, drawn from observed patterns across multiple institutional implementations, offers a practical frame of reference.

Emerging institutions are exploring XR for the first time or running initial experiments with no coordinated support structure. The focus at this stage is on identifying stakeholders, selecting one or two high-impact use cases, and building the foundational case for investment.

Developing institutions have growing interest and some structured support, but efforts are often fragmented across departments. The priority is building shared infrastructure, formalizing training, and establishing cross-functional coordination between faculty, IT, and support services.

Integrated institutions have a functioning ecosystem. Processes, training, funding, and support are established. Adoption is growing steadily and usage is increasingly embedded in curricula rather than treated as supplemental.

Sustainable institutions have built immersive learning into a self-sustaining capability with mature governance, long-term funding models, and a culture of continuous improvement. At this level, immersive learning is not a project—it is an institutional competency.

THE MATURITY MODEL IN ACTION

Developing Stage—St. Louis Community College is in the Developing stage of the XR maturity model, with a college-wide volunteer VR Faculty Working Group that has identified potential use cases across fifteen academic disciplines. Immersive technology is currently used in the college's career and technical education welding program, along with individual faculty-led academic applications. The working group is collaborating with the Center for Teaching and Learning, the Library, and Information Technology to develop shared processes for managing immersive hardware, software, and support across the college's four main campuses.
The group has also developed a detailed draft proposal for institutional investment and is conducting additional research to validate priorities, resource requirements, and funding assumptions before seeking institutional support and funding in the next fiscal year.

Integrated Stage—An interdisciplinary AR/VR graduate training program at the University of Rochester demonstrates how sustained institutional support can embed XR into curricula. As a partnership among multiple academic departments and Studio X, the program combines training, equipment access, consultations, and instructional resources to support student learning and innovation. Students have applied immersive technologies across diverse projects while developing advanced technical skills, illustrating how a functioning support ecosystem can move XR from a supplemental technology to an embedded part of teaching, learning, and research.

BUILDING THE ECOSYSTEM

The system layers described above are not abstract principles. Each one translates into concrete, operational decisions that institutional leaders need to make. The following sections provide practical guidance for each, drawn from the experiences of early implementers.

INFRASTRUCTURE AS A SYSTEM LAYER

Infrastructure for immersive learning extends well beyond headsets. Institutions that have implemented successfully have built multi-layered infrastructure that includes standardized hardware deployment across programs and campuses, a curated platform ecosystem aligned to institutional needs, centralized resource repositories for onboarding and troubleshooting, and coordinated device management systems. In one statewide deployment, a centralized VR resource center served as both a content library and a first-line support system, significantly reducing the burden on individual faculty and IT departments.

TRAINING THAT DRIVES ADOPTION

The most consistent finding across early implementations is this: faculty training is the single greatest determinant of whether an XR investment produces meaningful classroom use. Hardware without enablement produces shelf-ware.

Effective training models share several characteristics. They are differentiated by role and experience level—IT staff, faculty new to XR, and experienced adopters all need different pathways. They are hands-on and experiential rather than lecture-based. And they are continuous, providing ongoing support well beyond initial orientation. One statewide initiative combined a large-scale immersive technology conference with on-site bootcamps at every participating institution, followed by sustained technical support. The result: 98 percent of faculty who tried XR continued to use it in subsequent semesters.

ENGINEERING ADOPTION

Adoption does not happen organically. It must be actively engineered through on-site engagement, stakeholder-specific outreach, and structured first-use support. This is particularly true in higher education, where faculty autonomy is high and resistance to mandated technology adoption is common. The first experience a faculty member has with XR often sets the trajectory. Technical failures during initial demonstrations, poorly matched content, or lack of immediate support can permanently undermine confidence. Successful programs invest heavily in ensuring that early experiences are positive, well-supported, and clearly connected to instructional goals.

FUNDING AS STRATEGY

Funding decisions do not just support the system, they shape it. How an institution allocates resources determines which programs develop, which platforms are selected, and what the ecosystem ultimately looks like. Effective programs apply portfolio thinking to XR investment, optimizing for collective impact across use cases and institutions rather than evaluating individual projects in isolation.

A structured evaluation approach, assessing proposals across workforce alignment, educational impact, scalability, feasibility, and collaboration potential, reduces subjectivity and accelerates decision-making. In one statewide initiative, a formal scoring model was used to prioritize funding across nine institutions. The transparency of this process built stakeholder trust, enabled accountability, and ensured that limited resources produced maximum impact. The result: a $2.5 million investment that generated a validated 690 percent return on investment.[8]

State and federal grants remain some of the most significant funding sources for high-impact technologies such as XR. Federal grant programs such as the Economic Development Administration (EDA) supply large funding amounts that can strengthen the technological ecosystems of academic institutions in order to foster greater XR integration.[9] State grants provide local, more targeted, and less competitive awards that can help institutions make connections with XR technology foundations and outline practical immersive technology goals for education.

Though less common, private grants can serve as an important complement to state and federal awards through their more lenient reporting and compliance requirements allowing institutions to more easily apply them to specific XR-related developmental goals. They can also foster long-term partnerships between institutions and grant providers, introducing potential investors alongside their financial support. Corporate innovation grants such as Meta Reality Labs Research provide funding for academic institutions seeking to integrate XR technology into their curricula while supporting accessibility. Other private foundations, such as Google.org, award funds through competitions where institutions can propose their technologically-driven solutions to academic challenges.

EVIDENCE FROM THE FIELD

The principles described in this paper are not theoretical. They are drawn from the operational experience of institutions that have implemented immersive learning at scale. The most comprehensive evidence to date comes from a statewide higher education initiative in Wyoming, where immersive technology was deployed across nine institutions over a two-and-a-half-year period.

A STATEWIDE INITIATIVE: WYOMING

The Wyoming immersive technology initiative was not designed as an isolated pilot.[10] It was built as a coordinated system spanning the state's entire community college and university network, aligning

8 University of Wyoming, 2025

9 XR Association, "Memo: The Landscape of XR Development and Funding Opportunities for Startups," 2025.

10 Chocolate Milk & Donuts, 2025

state economic and workforce priorities with institutional implementation and faculty-led classroom integration.

The initiative organized immersive learning into three program tracks. **Clinical simulation** used VR nursing platforms to deliver patient assessment and clinical decision-making scenarios. **Workforce and safety training** used immersive simulation for mine safety and industrial operations training. **Library-based broad access** provided cross-disciplinary VR experiences through campus libraries, offering a low-barrier entry point for students and faculty across fields.

OUTCOMES

Across two academic semesters of full implementation, the initiative delivered results that demonstrate what becomes possible when immersive learning is treated as a system rather than a collection of devices.

- **6,625 immersive learning sessions** delivered across nine institutions
- **2,764 unique students** engaged with immersive technology
- **98% faculty reuse rate**—virtually every faculty member who used XR once continued using it
- **~80% of usage became required coursework** by the second semester, up from predominantly optional use
- **8.4 out of 10** average student rating for both learning value and overall experience

The trajectory from Spring to Fall semester is particularly instructive. What began as optional exploration evolved into structured curriculum delivery. Individual experimentation became classroom-scale implementation. This progression did not happen because the technology improved, it happened because the system around the technology matured.

ECONOMIC IMPACT

Independent economic analysis conducted by the University of Wyoming confirmed that the initiative's impact extended well beyond the classroom. The broader Wyoming Innovation Partnership, of which the immersive technology initiative was a component, generated measurable economic outcomes from a $2.5 million investment.[11]

- **$2.2 million** in direct economic impact
- **$20.7 million** in value added
- **199 jobs** created
- **$2.5 million** in state tax revenue generated
- **690% validated return on investment**

These figures position immersive technology not only as an educational tool, but as an economic driver. A distinction that resonates with legislators, workforce boards, and institutional leaders evaluating the case for investment.

11 University of Wyoming, 2025

The key insight from Wyoming's experience: the initiative discovered early on that distributing technology alone did not drive adoption. The pivot to a system design approach—building coordinated infrastructure, structured training, active engagement, and continuous measurement—produced the outcomes above. The story is not about the technology. It is about what becomes possible when insitutions build intentional ecosystems around it.

GETTING STARTED

The evidence and principles in this paper apply to institutions at every stage of XR maturity. The specific starting point varies, but the underlying architecture is the same. The maturity model introduced earlier provides a practical frame for identifying where an institution sits and what to prioritize next.

FIRST MOVES BY MATURITY LEVEL

Emerging institutions should start with a stakeholder census. Who needs to be at the table? Faculty, IT, library services, provosts, workforce partners? Identify one to two high-impact use cases aligned with institutional priorities and workforce needs. Consider starting with devices that allow for full immersion.. Secure a small number of devices and a curated set of content. Focus on demonstrating value, not scaling, and clearly define measures of success.

Developing institutions should focus on building shared infrastructure and formalizing training. Establish cross-functional coordination between faculty, IT, and support services. Move from individual experimentation to coordinated deployment with clear support structures. Begin collecting usage and outcome data from the start.

Integrated institutions should invest in measurement, sustainability planning, and expansion. Document what is working and what isn't. Develop a long-term funding model that does not depend on one-time grants. Extend proven program tracks to additional departments or campuses.

COMMON PITFALLS

The most common failure modes in higher education XR implementation are remarkably consistent across institutions. Recognizing them early can save significant time and resources.

- **Misaligned goals** arise when departments disagree on outcomes or priorities before implementation begins.
- **Underestimated technical complexity**—network requirements, device management, and platform integration—surprises institutions that treat XR as a simple hardware purchase.
- **Insufficient training** leaves faculty with equipment but not the enablement to use it effectively.
- **Poor first experiences,** often caused by technical failures during initial demonstrations, can permanently undermine faculty trust.

- **No sustainability plan** means short-term funding runs out with no path to institutional ownership.
- **Weak governance**—no clear ownership or coordination across departments—allows early momentum to fragment and dissipate.

> **The single most important message for institutions considering XR:** start where you are, but start with a system. Even a small initial deployment will produce better outcomes if it is supported by aligned stakeholders, structured training, and a plan for measuring what matters.

CONCLUSION: FROM ACCESS TO ECOSYSTEM

The future of immersive learning in higher education is not about better devices or more content. It is about building the institutional ecosystems—the strategic alignment, shared infrastructure, faculty enablement, and continuous improvement practices—that make immersive learning sustainable, scalable, and impactful.

Higher education is changing. Students are learning in new ways. Employers are demanding new skills. Institutions are under pressure to demonstrate that their programs prepare graduates for the careers that are available, not just the ones that existed a decade ago. Immersive XR technology has proven it can help meet these challenges, but only when implementation is treated as a system design challenge, not a technology purchase.

The evidence from early adopters is clear: when institutions build intentional ecosystems around immersive learning, the results in adoption, in outcomes, and in return on investment follow. This paper offers a roadmap for getting there, wherever your institution's journey begins. The principles are transferable. The evidence is real. And the opportunity—to align immersive technology with the evolving demands of higher education and workforce development—has never been more timely.

> **For more information on how XR can be designed for accessibility and inclusive learning, see XRA's Developers Guides, including Chapter Four:** Designing Immersive Learning for Secondary Education, and Chapter Three: Accessibility & Inclusive Design in Immersive Experiences.[12]

12 XR Association, "Accessibility & Inclusive Design in Immersive Experiences," 2026.

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ADDITIONAL RESOURCES

Transfr, “EfficacyStudies - Understanding VR Training Efficacy” (https://transfrinc.com/resources/efficacy-studies)

University of Rochester, Studio X (https://www.library.rochester.edu/spaces/studio-x)

HTC Viverse ”TXI x Viverse | Use Case” (https://news.viverse.com/post/inside-txi-webxr-collaboration-with-viverse?_gl=1*1ak7xv1*_gcl_au*MTM0MjQ1MzI0LjE3ODU3Nzk0NTU.*_ga*MTY0OTY3NjI2OC4xNzg1Nzc5NDU1*_ga_DGG9JZZMCG*czE3ODU3Nzk0NTUkbzEkZzEkdDE3ODU3Nzk0ODQkajMxJGwwJGgw)

Google ”How Brown University uses VR to immerse students in American History” (https://edu.google.com/resources/customer-stories/brown-vr/)

Teske, Jonathan, “Beyond DICE: Rethinking When and Why Mixed Reality Transforms Learning” ReframeXR, July 15, 2025 (https://www.reframexr.com/blog/beyond-dice-rethinking-when-and-why-mixed-reality-transforms-learning)