

# 8

## Personalized Experiences for All Students

With so many AR/VR resources coming out all the time, it's easy to get lost in the sea of immersive technology. I know the feeling. A new tool does something amazing, so you incorporate it into your next lesson—you know your students will enjoy the experience—stretching its connection to the content to make it work. Getting excited about immersive technology is understandable, but when there are so many options for using AR/VR, you don't need to force a square peg into a round hole.

When approaching any technology, we must identify and prioritize our goals. It's important to determine the best approach for our students and identify any possible limitations with delivering the content. We must consider first what our students need to know and master, placing their individual needs in line with our goals. The use of immersive technology has the potential to override typical classroom limitations, making the selection of the right tools for the right students that much more important.

Special consideration must also be provided to our students with disabilities. I shared the story of Trace in Chapter 2 and how he required a different technology than other children might when using VR. If I had placed the latest and greatest headset on Trace, he would have been extremely limited in his interactions and most likely, he would have asked to get out of the headset because it required too much mobility. His request to engage in VR must be met with the right tools for his particular needs.

## Targeted Technology

Most immersive technology resources are designed for the general public and do not take individual needs into consideration. Rarely do we see AR/VR designed for targeted groups, likely because the risk of losing money is too high for companies if they eliminate their larger audience. However, targeted AR/VR apps do exist. When I share immersive technology, I tend to focus on ways to make the tools available for all, but sometimes, targeted resources better address individual needs. The following are examples of immersive technology tools for specific audiences and needs.

### NarratorAR (Dyslexia)

When I first learned about the NarratorAR app from Debra Atchison (whose work with Google Tour Creator was shared in Chapter 6), I understood it as an introduction to letters. After exploring the app further, I noticed an incredible essential skill for letter and number formation was the spotlight. The main goal of NarratorAR is to motivate students to want to write letters and numbers by using AR. However, there is also a focus on the correct technique for writing letters and numbers, which is a critical skill for our students to write clearly and effectively communicate their ideas and thoughts while also keeping the writing process smooth and simple.



Figure 8.1. Scan this page using the NarratorAR app.

As I mentioned in Chapter 1, my youngest daughter, Elliana, has dyslexia. It didn't take me long to see how this app might benefit her. She tended to write most of her letters from the bottom up, which I thought was interesting. It should have been an early indication to me that she might have dyslexia, but at the time I thought her way of writing was just her style. I recall my own experience in school, being drilled on the correct way to write each letter and number, but it wasn't until I became mother to a daughter who has dyslexia that I realized how important correct letter writing is for students to become great writers.

In addition to the support for correct letter-writing technique in the NarratorAR app, students are also supported by an enormous library of content. Understanding that students have different needs and preferences for learning, NarratorAR covers the foundational fine motor skills for writing by having students learn the skill, apply the skill, and then build confidence in the skill. Students work on literacy and numeracy in forty ABC and 123 AR activities. Students apply the skills they've learned in the Get Moving and Story Pages AR activities, while building confidence in the Super Hero and Ocean AR adventures. Scan the image in Figure 8.1 in the NarratorAR app to see an example.

### **Sesgoritma (Sign Language)**

Sesgoritma is a mobile sign language translator app powered by artificial intelligence. The app is among the first of the new AR applications that use AI to support communication. Sesgoritma translates sign language by hand tracking in real time using the camera on a device. The purpose of the tool is to minimize barriers when communicating with deaf or hard of hearing (HoH) individuals.

The app works in several ways to support communication and provide knowledge to all individuals. A basic option is speech-to-text, where an individual can speak, and the text will show up on the screen.

While not perfect, Sesgoritma does offer some communication support to individuals who need assistance and don't have access to an interpreter. For the person trying to understand sign language, the app opens the camera and translates some basic signs. The app then converts the signs to text and speaks the text aloud.

The best feature of Sesgoritma is the option to upload your own signs into the app. The app opens the camera and snaps a picture of your sign and its meaning to include in future communication. The app remains imperfect, showing the wrong words at times, but the concept is vitally important, and the AI will improve over time.

As an aside, one of my best friends, Dr. Marialice Curran, has brought attention to deaf and HoH accessibility in education. Her husband Sean is deaf, and the insight into the obstacles he faces every day helps inform us as we do our part to break down as many barriers as possible. Sean has the amazing ability to read lips to communicate with others outside of the deaf and HoH community. During the COVID-19 pandemic, one of the greatest hardships he faced was the dilemma of masks, which prevented him from reading the lips of anyone wearing one. When his wife saw the possibility of including a transparent film in a mask, our mutual friend Joy Schwartz was up to the challenge of crafting transparent masks for the whole family.

### DIY Face Shield

Download the free 3D object to print at [bit.ly/printfacemask](https://bit.ly/printfacemask).



**Figure 8.2.** Transparent masks like this one allow the deaf and hard of hearing communities the opportunity to read lips. View a 3D version of a face shield that uses cling film (saran wrap) and a rubber band by scanning the QR code (or going to [mywebar.com/pi/4737](https://mywebar.com/pi/4737)) on a mobile device and then viewing this image.

### Microsoft Immersive Reader and MERGE Explorer (Reluctant Readers)

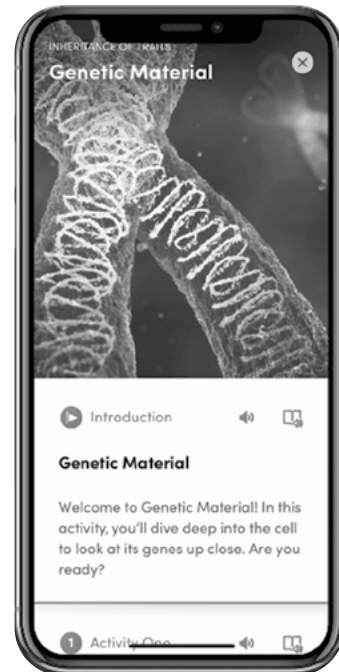
The goal of Microsoft Immersive Reader is to make reading more interactive, translating to better comprehension. The tool provides access to content by customizing text into multiple formats in order to provide a personalized reading arrangement for the individual. The text can be modified by size, font type, font color, highlight color, and spacing based on the students' individual needs. In addition to font adjustments, Immersive Reader will read the text at varying speeds in more than eighty languages, making the content more accessible than ever. If you're still not convinced, Immersive Reader can also convert text into pictures or highlight different parts of speech.

You may be surprised that the Immersive Reader product was initially built for students who have dyslexia. Using Immersive Reader can help level the playing field for struggling readers, making our lessons more equitable for all learners. Additionally, providing a tool that allows our students to be more independent while exploring content is key for them to feel confident in their skills. This tool has supported many students beyond those with dyslexia, because all students can benefit personalizing their reading experiences.

The integration of Immersive Reader in the MERGE Explorer app was released in late 2019. The integration of the content with an immersive experience is an obvious improvement for many learners. But when the content is customized for each individual, readers are able to explore the text and 3D experience with precision to absorb a greater amount of knowledge while deepening their understanding.

The MERGE team may have integrated Immersive Reader early, but other immersive technology companies are quickly joining in. Nearpod and Flipgrid are other early adopters making content customizable for learners.

**Figure 8.3.** Discover what's possible using the MERGE Explorer app with Microsoft's Immersive Reader by scanning this figure using the Arloopa app.



## NuEyes (Visually Impaired)

The increased enthusiasm for VR in recent years has mainly stemmed from the affordability of the products, which are finally priced for the consumer market. The products have continued to improve in visual clarity, sharpness, and alignment of movement. The medical field has found VR devices extremely beneficial for certain communities.

The NuEyes project has found VR headsets to be especially useful for visually impaired individuals. Using incredible technology, NuEyes transforms the view through a VR headset and provides the means to lighten, clarify, zoom in, change color, and more to give an individual sight! The stories of individuals getting to see for the first time (or for the first time in many years) are overwhelming. VR technology is providing something so much more important than the thrill of a game.

### Example: VR with Visually Impaired Students

An example of an educator using VR with visually impaired students comes from Christy Cate at the Region 14 Education Service Center in Abilene, Texas. Cate's center held a pirate-themed adventure titled "Tech Treasures" for their visually impaired students. The makerspace hosted the students and provided many different technology opportunities, and AR/VR was among the students' favorites.

One of the experiences that took the Region 14 team by surprise was the introduction of Google Expeditions and the MERGE Cube. The students were asked to take off their glasses and put on the VR viewer with the Expeditions app for underwater adventure. Many students were hesitant to take off their glasses, because several of the students were legally blind and could only recognize light and color. When the students agreed to try the technology, most of them were able to see things that they'd been unable to before (see an example in Figure 8.4). Using the viewers, students were able to learn in new ways. The experience filled them with laughter and wonder.



**Figure 8.4.** Scan the QR code using your camera and then view the image to see some of the sea life that the students were able to discover.





**Figure 8.5.** How many fish can you find? Use the Assemblr app to scan the QR code.

### **Starlight (Medical Procedures)**

An organization that has been around in children's hospitals for years is the Starlight charity, which has sought to bring many smiles to seriously ill children. The organization has brought interactive gaming spaces into the hospitals, so children and parents can escape for a bit from the burdens that they face. Starlight has continued with their mission for many years and has recently begun introducing VR into hospitals. The responses from the children have been stunning and have encouraged Starlight to continue providing more than 1,300 VR headsets in the hospitals for more children to enjoy.

The Starlight organization has found that VR gives children the illusion that they are being transported to a new world. Samsung headsets are preloaded with twenty applications for children to select from. The devices allow children to use them lying down or sitting up, making the experience accessible for the various needs of the individual. In some cases, the VR experience has been so powerful, it has reduced the need for certain medications in some children.

It's an incredible feeling to know that immersive technology can convince your body that you've been transported to another place, so much so that children feel safer and happier. The impact of immersive experiences on these children's mental

health is also positive, reducing the anxiety and trauma that hospitalized children often experience and changing the way they feel about medical care.

### **Limbix (Depression)**

New technology in immersive mental health is being developed to support adolescent children who struggle with depression. Limbix technology uses VR for cognitive behavior therapy and provides value-based activities to provide digital therapeutic interventions. Limbix may allow youth to find ways to cope with stress, anxiety, and depression outside of prescription drugs. While this treatment is still in its early stages, it's important to note that the medical field values the impact that VR can have, and these interventions will continue to grow in the coming years.

## **One Size Does Not Fit All**

Approaching the selection and use of AR/VR tools, the educator should recognize that some students will need different experiences than others. To give every student an iPad or Chromebook and think they will all thrive on that device is just as ridiculous as saying they will all love the same subject in school. Not only will they have different preferences, but they'll have diverse needs and skills. The different devices have specific uses and purposes and when identifying which device is needed, ideally we should look at individual students.

If we learned anything from the COVID-19 global pandemic, it was that the ability to provide quality remote learning is critical. One of the biggest areas of concern initially was the limited availability of resources for our students to learn from home. The schools that were already set up with 1:1 devices were impacted by the pandemic shutdown, but not nearly as much as those schools that didn't have devices or access for their students.

While the discussion for 1:1 devices in schools has been around for more than a decade, the budgets to purchase and maintain those devices are rarely available. Schools that were able to purchase devices were often funded through grants, and when it was time to replace the devices, there was no funding to upgrade with new devices. Now that schools have seen how the pandemic has impacted student learning, many are attempting to prepare for the future. This is the time to make the needs of individual students a top priority to deliver exceptional learning at school or remotely.



## Student Ownership

The products and activities that we use in the classroom rarely originate from students. Students have little say about classroom products because they are not included in the purchasing discussion. We can guess what we believe students will want to use in their learning, and it's possible that we may guess correctly. However, the best way to approach choosing student products and activities is to invite our students into the discussion.

Evaluating past student work can provide good insight into a new product. What is the product capable of doing, and can it meet the needs of my individual learners? Do the student products inspire ideas for your lessons, or do they seem limited? Is the immersive technology tool purposeful when exploring in AR/VR, or is it just a gimmick? Do the final results of the program require the immersive technology aspect, or does it just add to the experience as entertainment? These are important questions to ask when considering a new product or program. Including student feedback can help inform your decision making by understanding how your students envision using the product in their learning.

Many schools are engaged with companies that are eager for you to test their product, and if given the opportunity, classrooms can get early access to an upcoming tool, provide feedback to deliver the best product to the classroom, and get top-notch support while using the new product for free. Most immersive technology companies are new start-ups who need pilot schools to help them define the final product while also getting valuable insight into the needs and interests of the classroom. When districts are testing new products or programs, ask students to be part of that testing process. These beta testers will love being the first to experience new products. Most importantly, we show these students that their voices are important—their suggestions may inform the design of these products for other classrooms.

## Student Voice and Choice

Lake Shore Central Schools in Angola, New York, provided a great example of schools using the latest tools with students' interests in mind. The technology integration specialist, Michael Drezek, worked with the high school art teachers to support an initiative to bring 3D design into the classroom using Google Tilt Brush. Based on the New York state media art standards, students were asked to create, perform, produce, respond to, and present artwork. The goal of using Google Tilt

Brush was to empower students to meet media art standards as well as the ISTE Standards for Students. Through a team planning approach, the learning experience included Google Tilt Brush on the Oculus Rift, Screencastify, and Google Classroom.

A strategic technology plan and a responsible budget allowed the district to purchase VR headsets. The purchase granted students the ability to creatively demonstrate knowledge using Tilt Brush on the Oculus Rift, shared in Google Poly. The art included famous historical pieces and original artwork. The VR learning experience demonstrated the incredible talent and diverse skills that each student brought to the project.

### **Steps Taken by LSCS to Use Tilt Brush in the Art Classroom**

- Plan the right technology to meet the goals and objectives.
- Identify possible devices and programs and research educational uses.
- Purchase Oculus Rift.
- Purchase and install Tilt Brush by Google.
- Collaborate with the IT Department to work through any web filtering issues.
- Get familiar with the device and application.
- Watch and enjoy students creating art in virtual reality.
- Be willing and ready to get “unstuck” when faced with something new.
- Export creations to Google Poly to share work with an authentic audience (without providing the full names of the students).
- Teach students how to use Screencastify.
- Teach students how to share files to Google Classroom.
- Learn from one another, side by side.
- Celebrate each other’s successes.
- Gather feedback from students and brainstorm new ways to utilize VR in the art classroom.

## THE IMMERSIVE CLASSROOM

After completing the projects, students were trusted to use their experience and create Tilt Brush tutorials for their peers. The tutorials were filled with the students' process in their artwork, as well as insight into new ways to use Tilt Brush, and were then posted in Google Classroom. The learning experience allowed students and teachers to work side by side using immersive technology. Drezek believes in the power of creation and recommends that students lead when using these technologies:

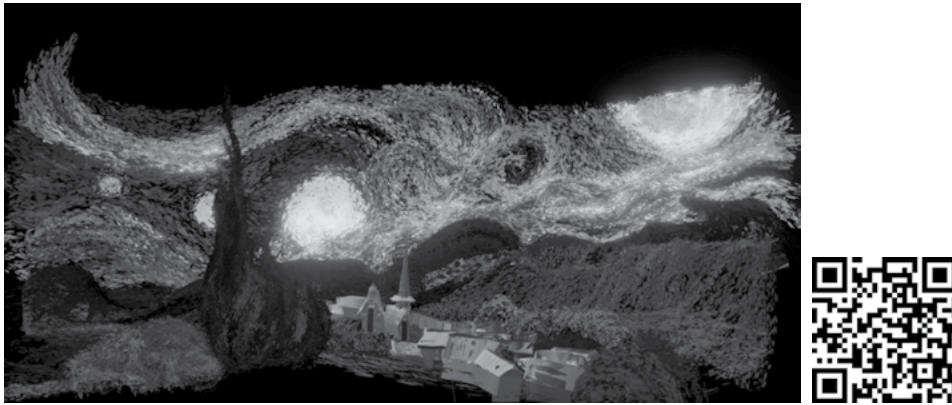
You don't need to be an expert to get started. You just need to be a willing learner and open to the possibilities of what AR and VR could bring to your classroom to meet learning objectives.

The immersive journey that Lake Shore Central Schools went through was highly successful and at times had unexpected occurrences. The plan and objectives were clear and completed, but there were other outcomes that the team experienced along the way. In an effort to receive the maximum benefit from these immersive lessons, there was flexibility to allow the experience to expand beyond its specific purpose, providing educators and students new and creative ways to use the tool.

## Passion-Based Learning

My good friend Andi McNair is an expert on Genius Hour, or passion-based learning. Her work with gifted and talented students was the start of her journey, but she believes that every student deserves the opportunity to pursue their passion in learning. She works with schools to implement the genius hour process with learners to impact others and inspire change.

In her presentations, she often delivers examples of immersive technology as a compelling option for students to experience new places and increase engagement, improving a willingness to invest into the project. One of the top resources include AR portals to allow students to walk into new places and explore the world from anywhere using AR. Andi presents the benefits of using the MERGE Cube to visualize objects needed to explore in the student projects. Using immersive technology, she encourages a commitment to extend learning in ways that are impossible without it.



**Figure 8.6.** View this Google Tilt Brush creation by scanning the QR code and selecting View AR in the ARize app.

## Student Leadership

At times, we think we know exactly what our students need and want in immersive technology, but until we present it to our students, we're only taking a guess. I've often felt excited to share a new resource with students only to find that they don't place the same value on that experience as I did. On the other hand, I've given students a tool to test out expecting it to be a flop only to have them love using it. The students have much more enthusiasm to continue exploring than I could have imagined. In the end, we need our students to guide us to use the best and most effective tools while maintaining their interest with challenges and active learning experiences.

An incredibly talented member of the ARVRinEDU community is David Lockett. If there is something new being developed, David has already tried it with his STEM students. Mr. Lockett's passion to bring in new tools is motivated by his students' enthusiasm for learning. The direction of the classroom is largely led by his students as he's empowered them to pursue their passions by exposing them to many areas of STEM.

The use of immersive technology is an engaging method to capture the interests of our students. He believes that AR and VR apps go beyond the "cool" factor to foster skills that are in high demand for new careers ranging from construction to

## THE IMMERSIVE CLASSROOM

healthcare. In the STEM classroom, he believes that AR/VR tools provide the visual learning that many students need to make a deeper connection to the content while capturing their attention and sparking their imagination. In short, immersive technology is much more than “wow.”

In Mr. Lockett’s classroom, he has the unique opportunity to introduce relevant AR and VR content and concepts to build students’ design thinking, problem-solving, and critical analysis skills. The use of immersive technology supports the needed learning experiences without the high cost. Valuable mobile content eliminates the learning curve and the requirement to purchase new products.



### Immersive Learning Challenge

Create a video tutorial on an immersive technology tool that will support all learners. Share the link to the video tutorial on social media using #ARVRinEDU.