

CASE STUDY

Iowa Vocational Implements VR Technology for Teens and Adults With Special Needs

The Challenge

Engage special needs students in STEM to support their development of 21st-century work skills



The Solution

With zSpace, students are actively participating, enthusiastic about learning, and demonstrating 21st-century skills.

Students at Iowa Vocational Rehabilitation Services (IVRS) are incorporating virtual reality (VR) technology into its curriculum to ignite the interest of special needs students in STEM (Science, Technology, Engineering and Math) careers and support their development of 21st-century work skills. Using zSpace, students learn STEM subjects using 3D, virtual-holographic images that they can move and manipulate. Initial pilots with the technology indicate that zSpace could transform the way students with disabilities are taught.

The active participation and enthusiasm students exhibit with zSpace are some of the reasons Kenda Jochimsen, bureau chief of Iowa Rehabilitation Services, is expanding the usage of virtual reality at IVRS.

“I knew students loved anything technology and did not doubt the value of the medium by which students would be presented information,” she said. “But when I observed students in high school who have disabilities, who are in special education, use zSpace’s virtual reality computer, I was convinced that this could be a potential game changer for students with disabilities.”

Jochimsen described one of the initial learning sessions with zSpace. At the start of the session, the students were quiet, and one student was unable to maintain much eye contact with an adult and reticent to get involved.

Another male student with significant written language deficits was not confident enough to even ask aloud for assistance. A female student who was more outgoing appeared to be excited and interested, but she and another female student approached the system as isolated learners.

Within 15 minutes three of the students began interacting with one another, and within 20 minutes the young male student was asking the other two students how to spell words that needed to be entered into the unit being studied.

Gradually, over the course of about 45 minutes, the student who repeatedly refused to get involved began to move forward in her chair, unlock her arms, and within an hour was on the edge of her seat participating, and actually indicated an interest in taking the lead on a botany unit.

Students at IVRS can use zSpace to engage in activities such as dissecting virtual biological specimens and performing troubleshooting exercises on an electricity unit. However, for Jochimsen, the most exciting occurrence is that students demonstrate the exact skills the instructors at IVRS try to instill in all their students -- 21st-century skills that every employer looks for, such as:

- Civil discourse and disagreement
- Collaborative communication
- Problem-solving and deductive reasoning
- Teamwork and troubleshooting

“I have rarely heard a student in special education want to stay at a lesson even when it was time to go home,” said Jochimsen. “They’re also interacting with each other and the instructors like they never have before. Students in different social groups are working together, and the student who was reticent to be involved said good bye and looked me in the eye as she left.”

IVRS is going to incorporate zSpace into two districts to determine the impact on measurable skill gains, generating interest in STEM, and development of career goals due to the connection with career exploration the system offers as our counselors work with the district to connect the zSpace system with the needs of local employers.

“It appears that zSpace could transform learning for students in special education,” said Jochimsen. “Given the results we’ve seen so far, we are going to evaluate if what we’ve seen can continue and create a lasting impact.”