



The gas apprenticeship eBook library contains a complete set of training modules and apps, separated into phases.

Utility Dives Into AR to Train Apprentices

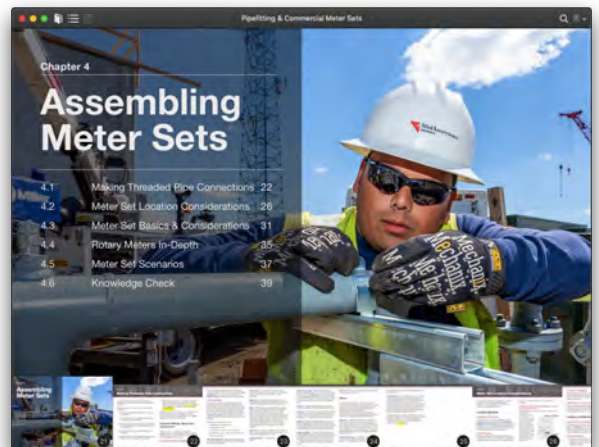
MidAmerican uses a blend of augmented reality and eBooks to develop a digital curriculum for its apprenticeship programs.

By **Mike Hoff**, MidAmerican

Like many other utilities, MidAmerican Energy Company trained its apprentices in a traditional classroom setting with large binders of information and how-to videos on VHS. After reviewing the materials in the classroom, apprentices would practice hands-on activities with trainers providing guidance and instruction.

Today, the utility has partnered with Index AR Solutions to create a digital training curriculum for its apprentices. With augmented reality (AR), MidAmerican has created step-by-step augmentations walking apprentices through the hands-on activities and providing tips and tools to get the job done safely and correctly the first time.

MidAmerican's journey into AR training began back in 2014. The utility entered into an agreement with its labor unions to optimize its resources by combining its two primary



Apprenticeship eBook training content is highly visual, boosting reader engagement and knowledge retention.



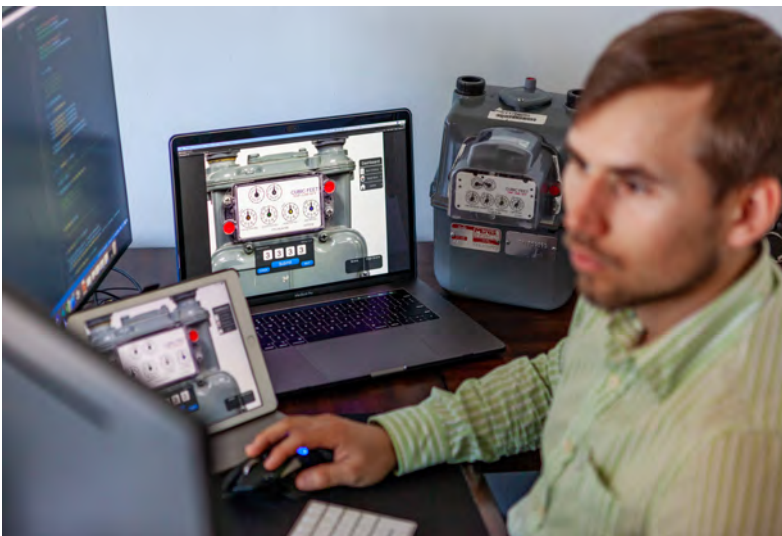
Videographer prepares to film worker demonstrating a pipe fitting fusion procedure for video to be used in apprenticeship training eBook.



Worker demonstrates the proper pipe fusion procedure for training video to be used in apprenticeship training eBook.



Worker uses a tablet-based app to visualize gas meter internals.



A developer works on an app that helps teach apprentices how to quickly and easily read gas meters.

time-based gas apprenticeship programs into one competency-based hybrid program – gas technician.

As the apprentices were required to retain more information over a shorter period of time, the need for innovative, engaging training was evident from the start of the gas technician program. MidAmerican came across the AR work from Index AR Solutions and was drawn to it for training and field applications.

The utility realized that a gap remained with the written training materials, and it decided to pair the AR with eBooks. By pairing them together, the utility has put a complete curriculum into the palm of every apprentice's hand via a tablet.

Creating Videos

AR provides step-by-step guides for apprentices to complete everyday tasks such as building a residential meter set. The augmentations walk the apprentice through what personal protective equipment (PPE) and tools are needed for each step and overlays critical information on to the area they are working.

MidAmerican has also used AR to show how elements of the system, such as a regulator or meter work. An apprentice's understanding of how equipment works in the field accelerates their ability to diagnose system issues in real time.

eBooks have also become a repository of the knowledge of the utility's workforce. The written material in the eBooks is enhanced with short video clips of the employees showing how to complete a task or walking through how to set up a work zone. Other videos include employees talking about their experiences in the field. These videos, which capture the knowledge of the aging workforce, can be shared with every apprentice.

By using short, YouTube-style videos, the utility is able to increase knowledge retention and align the instructional approach with how



many individuals learn do-it-yourself type skills. MidAmerican has also been able to inject safety warnings and human performance tools into the AR applications and eBooks to keep safety top of mind. Many of the eBook videos focus on safety tools and techniques.

Launching a Program on the Electric Side

Now that MidAmerican has rolled out the AR training program for the gas technician apprenticeship, the utility is now focusing on introducing it to the electric apprentices. One of the major lessons learned from the gas technician apprenticeship program was to assign ownership to a dedicated project leader and involve everyone—especially the represented workforce—in the process.

The utility did not start this project with a list of AR applications. Instead, the applications MidAmerican has developed have come organically from what is important and critical to its represented workforce. For example, employees are lining up to tell their stories and contribute to the eBooks, which reflects the represented workforce's commitment to their craft, and ultimately, their customers. The company is taking this same approach when developing training tools on the electric side.

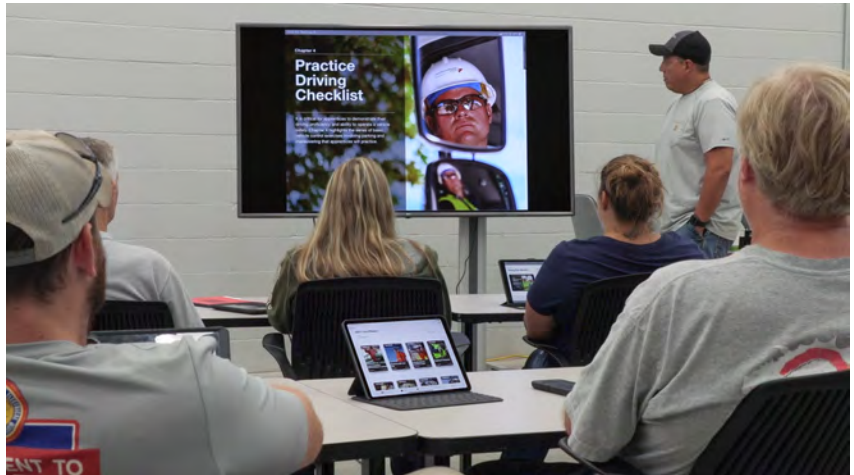
All of MidAmerican's existing apprenticeship programs have written materials and structured curriculum, which establish the eBook framework and written content. Once the team defines the framework, they collaborate with the represented workforce to determine what photos, animations and videos are needed to enhance the eBooks. The utility then travels throughout the service territory to create the digital content.

The company is taking the same approach with AR applications. Once MidAmerican has established the eBook framework, the team comes together for an idea session on what tasks and concepts would be best reflected using the technology. The majority of the ideas come from MidAmerican's represented workforce.

Accessing Training Anytime and Anywhere

MidAmerican kicked off the development of AR and eBooks for its electric meter technician last year with the project on track to be completed in 2021. Once the company has completed its gas technician apprenticeship and gas welding apprentices, it will begin development of the program for its primary electric apprenticeship—the line mechanic. The development should begin in late 2020 or early 2021.

Each apprentice is issued a company-supplied iPad on their first day of work loaded with all the training materials, as well as standards manuals and safety rule book. The tablet, the train-



A gas trainer walks apprentices through the eBook training materials delivered on the tablet.

ing materials and their notes all stay with the apprentices even after the complete their training.

Having the training materials on tablets provides apprentices with broader accessibility of the materials. The next step for when apprentices are in the field is to connect them back to trainers or subject matter experts when they need additional support. MidAmerican is researching ways to accomplish this using existing video-calling technology, such as FaceTime, so the apprentice can contact any trainer or subject matter expert remotely, show them the challenge they are facing and work with them to come up with a solution in real-time.

The company is committed to providing all employees, both represented and non-represented, with eBooks and, if applicable AR training. The company has also begun developing eBooks for its non-represented employees focusing the initial effort on engineering positions. Many of those eBooks will leverage the materials already developed for the gas technician apprentice.

Looking to the Future

MidAmerican is now exploring wearable technology such as creating a hands-free tool for when apprentices are working on equipment both in training and in the field.

The AR applications and eBooks are reinvigorating the company's apprenticeship programs, the apprentices and employees. Using the collaborative development approach, MidAmerican has gained overwhelming support and engagement from its represented workforce.

The fit into the programs has been seamless, and the adoption of the technology has been simple as most employees use similar technology on their smartphones. The results and engagement from the employees reflects in the commitment to further develop additional apprenticeships and non-represented training programs using these technologies.

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