The Next Generation of Gear Industry Training

AI meets video-based learning

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In gear manufacturing, precision isn't just for the products—it's a necessity for the people who make them. Whether it's a new hire learning the basics or a seasoned operator adapting to new processes, effective training is essential for maintaining quality, safety, and competitiveness.

But let's be honest: training budgets are tight, time is limited, and inefficiency is expensive. Every minute spent on learning must translate into value on the shop floor.

As many of you know, delivering high-impact, cost-effective training has been a primary objective of mine since starting Arvin Global Solutions in 2015. But my roots in workforce development go much further—to the early 1980s at Arrow Gear. At that time, video-based training was first becoming a practical option for forward-thinking manufacturers, and we jumped into it wholeheartedly. Over the years, we have developed a robust video training library that proved to be an asset for our entire workforce. By harnessing the power of video, we were able to scale our training efforts across a broad range of key topics.

Today, video remains one of the most effective training tools available to manufacturers. It offers consistency, accommodates different learning speeds, and presents complex topics in visual form—often with demonstrations and animation that bring concepts to life. But as effective as it is, video also has its limitations. As a rule of thumb, viewers retain just three to five key concepts before their focus begins to fade.

When a Five-Minute Video Isn't Enough

Imagine giving your employees access to on-demand video training—then pairing it with a tool that allows them to ask follow-up questions, explore related topics, or clarify concepts in real time. That's not a future scenario. It's available now.

Thanks to advancements in artificial intelligence, particularly custom AI-powered chatbots, companies can now augment traditional video-based learning with interactive, searchable support—available any time, day or night.

At AGS, we've recently been involved in the development of AI-integrated training platforms for a very different but equally demanding environment: public education. We partnered with Dr. Kara Coglianese, superintendent of the Crete-Monee School District 201-U in Illinois, to strengthen her district's professional development systems. After starting to build a library of video training content, we worked with the district to integrate chatbots that allowed staff to access answers to frequently asked questions, navigate district policy, and retrieve HR-related information quickly and easily—all without placing additional demands on administrative staff.

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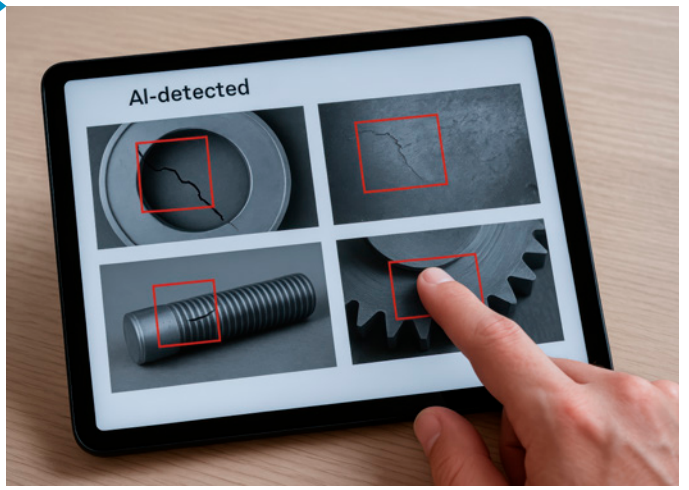

"Our goal was to simulate the individualized experience people expect today," said Dr. Coglianese. "More than ever, people want specific answers on demand. They're not reading long documents—and they're not willing to wait around for emails or returned phone calls. By pairing video-based training with AI chatbots, we're giving our staff 24/7 access to policy information, HR procedures, and training reinforcement in a format that fits their fast-paced lives. The chatbot doesn't replace training, but it supplements it—meeting people where they are, on their own time, and in the style they're most comfortable with."

The success of that initiative made one thing clear: this model could be just as effective in the gear manufacturing sector.

You might be thinking, "Hang on, Joe—how am I supposed to afford AI programming for my training?"

Here's the short answer: integrating custom AI chatbots with video-based learning is a lot easier—and more affordable—than you might think. While getting into the technical details is beyond the scope of this article, the ease and accessibility of this approach may soon have you thinking it's something you can't afford to ignore.

From Theory to Practicality: A Gear Industry Example

Consider the learning curve facing a new employee in a gear shop. Let's say they've just completed a video module introducing basic gear geometry. A week later, they come across the term involute and want a clearer understanding. Instead of tracking down an engineer or thumbing through a dense training manual, they simply open the chatbot interface and type in their question.

Within seconds, they receive a response that defines the term, includes visual references, and may even link to a segment from the original training video or a related resource. In essence, the chatbot becomes an on-demand mentor—reliable, patient, and always available.

And the applications don't stop there. Beyond simple definitions, one of the biggest advantages of pairing AI chatbots with video-based training is the ability to provide quick, specific job-ready reminders at the moment of need.

For example, after training, a machinist might ask the chatbot:

- "What is accumulated tooth spacing?"
- "What feed rate should I use when hobbing a 4140 steel gear at 30 Rockwell C?"
- "What are the steps to balance a grinding wheel?"
- "What is tooth tip relief modification?"
- "What PPE is required when loading parts into a quench press?"

The real value lies in how the chatbot delivers the response. Instead of simply reciting raw training material, it summarizes and frames the answer in context—much like an experienced co-worker or mentor offering a quick, practical reminder.

This technology also addresses one of manufacturing's most persistent challenges: preserving tribal knowledge. These are the insights, tips, and troubleshooting techniques that live in the minds of veteran employees—the kind of knowledge that rarely makes it into formal documentation. By strategically capturing that expertise in a structured, searchable format, companies can ensure it remains accessible long after those experts have retired or moved on.

Now imagine you have a respected engineer on your team—let's call him Fred. Over the years, Fred has acquired decades of expertise. He knows more about your operation than anyone else. Now imagine making Fred's knowledge accessible to the entire company—not just to those who can catch him in the hallway. With an AI chatbot, new hires and experienced staff alike can ask questions and receive thoughtful, experience-based answers anytime. This is what AI can do.

"We've seen firsthand how AI chatbots can make a real difference as a supplement to video-based training—especially during stressful or complex situations," Dr. Coglianese explained. "Whether it's a cybersecurity issue, a bomb threat, or just a question about Workers' Compensation, the chatbot delivers clear, logical steps without the emotional noise that can cloud decision-making. It's also taken a lot off our HR team's plate. The chatbot is a consistent, patient, and visual tool for getting answers fast. Especially for visual learners or people who are uncomfortable asking for help, this kind of support can be a game-changer."

The Future of Learning Is Already Here

AI is already transforming manufacturing—from machine learning algorithms that optimize cutting paths to predictive maintenance systems that anticipate equipment failures. Training is simply the next frontier. Video learning has proven its worth but pairing it with AI opens the door to something far more dynamic, responsive, and scalable.

As new technologies continue to reshape the shop floor, our approach to training must evolve as well. The ability to deliver flexible, just-in-time learning—supported by institutional knowledge and responsive AI—isn't just a competitive advantage. Increasingly, it's becoming a necessity.

For those of us in the gear industry, this evolution presents a powerful opportunity. It's a chance to retain the depth and craftsmanship that define our work, while embracing the tools that will help us train better, faster, and smarter.

Because in this business—as in any—you're either advancing, or you're on your way to becoming obsolete.