Brain scientists at Oxford University’s Department of Experimental Psychology were asked, “How do visual instructions influence the motor system?” Their reply was, “We saw direct correlation of visual cues to motor skills responses.” In other words, using visual aids combined with instructions can produce consistency in motor skills.

Manufacturers can put those findings to use by including visual cues with work instructions in the factory. Over the last ten years, many consultants and manufacturers have begun to use visual images to accompany their manufacturing line assembly instructions. Called operational method sheets (OMS) or visual method sheets (VMS), they are produced by combining traditional work instructions with electronic images to increase the understanding of work instructions on the factory floor.

CAD drawings have been used for some time for documenting manufacturing procedures, but they are often burdened with lengthy technical text. To produce true visual documentation, lengthy technical work instructions are changed into short sentences and electronic images attached. The images show the employee what to do. They can clearly see how the work is to be performed, instead of reading about it and trying to interpret it for themselves.

Expecting the line-worker to interpret text-heavy work instructions can be a recipe for disaster. Using them for training is just as bad. Inconsistent quality can and usually does result when relying on text alone. Employees are seldom willing to read lengthy technical instructions. It’s not unusual to hear assembly line employees asking other line employees, “What am I supposed to do here?” This uncomfortable reality does not fit well with our pursuit of perfection -- doing it right the first time -- in manufacturing.

It’s true that a picture is worth a thousand words. It once took illustrators hours to produce pictures for OMSs and VMSs from poor photocopies and hand drawings, or from text over CAD drawings. With digital cameras, however, the job is much easier.

Electronic images are combined with written instructions in a consistent format for easy and rapid comprehension. The result has been extraordinary. Companies have witnessed higher quality and lower error rates in the building of their products.

Many workers speak English as a second language these days, and visual instructions can overcome problems encountered when using English-language text instructions. More pictures with fewer words seems to be a good answer to language problems.

So much can be demonstrated by an electronic image. Using pointers and even fingers pointing in the pictures, most of the story about the work to be performed can be told. A few cut-out arrows and symbols attached to sticks or wires positioned in the picture can
eliminate the need for picture editing software. The visual approach makes the process of illustrating a sequence of events (SOE) short and easy. You can set up your prototype line, walk through the steps, take pictures and record the instructions, and then combine them into VMS.

Many companies have successfully used word processing, presentation software or other common software packages to create pictorial instructions. There are also standalone software packages for creating visual instructions in a more automated and rapid fashion.

The conclusion is this: If you have training problems, quality problems, employee comprehension problems with repeated, time consuming questions from employees about what they are to do on the assembly line, visual (pictorial) work instructions are probably your answer. It answers the cry of many employees who believe, “If I see it, then I can do it.”

Jerry Boynton, Principal Manufacturing Engineer of HEI Inc., said about using VMS’s on their assembly floor, “Our assembly procedures now stand head and shoulders above any previously created…document…our Program Managers have praised the appearance and simplicity of communicating a process pictorially…our assembly staff has become convinced that instructions are now easier to understand and explicitly illustrate the ‘how to’ of a process without the need to read and understand lengthy text descriptions.”

Following the observations of the Oxford brain scientists, using the correlation of visual cues and motor skill responses could solve many problems. All that is necessary is to add electronic images to assembly instructions and cut the lengthy text to create employee-friendly pictorial instructions.

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