

**The first step to develop a training course:**

**Determine course objectives**

While this may sound very obvious first step, I'm amazed at the number of courses that seem to have no tangible objectives. The instructor talks – students listen – and after a period of time – the course ends. But nothing substantial (or *predictable*) is accomplished.

A training course without objectives is like a ship in the ocean without a rudder. The instructor wonders aimlessly though ineffective material, providing students with no idea about when they are supposed to arrive at their destination.

To avoid aimless presentations, you must set objectives related to what you want the student to know upon completion of the course. These objective should be spelled out in detail, and explained to students when the course begins.

**Get help!**

Frankly speaking, I've heard some pretty negative comments from people working in industry about the training available from their local technical schools. Comments run along the lines of "they're out of touch with what's really going on" – or – "the people we've hired from that school had to be re-trained from scratch".

From these comments, it's obvious that some technical schools don't involve people from local industry when setting objectives for the courses they conduct. Fortunately, most technical schools have some kind of advisory committee comprised of people from local industry. Since your best potential for attracting students

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**PowerPoint Tips**

**Editor's note**

Microsoft PowerPoint is fast becoming the software product of choice for professional presenters. Each issue of *Instructor Notes* will include PowerPoint Tips to help you improve your slide show development skills.

**Interactive slide shows – a great way to demonstrate control functions!**

*Suggested by Denis Barrette of Methods EDM division*

Just like HTML for the internet, Microsoft PowerPoint allows you to create hyperlinks. Also just like HTML, hyperlinks can be text based or they can be created on images. While presenters usually use hyperlinks to transition from one segment of their slide shows to another (possibly to skip an unneeded portion of the presentation), you can also use hyperlinks to emulate many control functions, creating a very impressive training tool.

The example below stresses the point. I've created two slides in a presentation that represents important control screen pages. The left image represents the POSITION page. On the position page, there is a soft key to access the PROGRAM page. I've created a hyperlink for the soft key under PROGRAM on the POSITION page that makes PowerPoint jump to another slide that includes an image of the PROGRAM page. When you click on this soft key, it makes PowerPoint

display the PROGRAM page!

This just scratches the surface of what can be done. You could of course, make all soft keys active in this manner. You'd simply have to create a slide for each display screen page and link it to the corresponding button.

**Do you have a 18i control?**

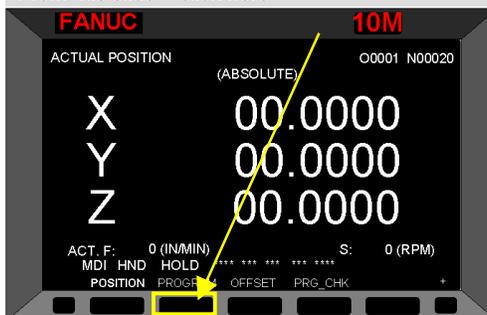
If you do, here's a great suggestion from Denis Barrette of Methods EDM Division.

The Fanuc 18i control allows us to capture any screen as a BMP (bitmap) file. I insert the BMP file into a PowerPoint slide, creating a great view of the operator/control panel. Using *invisible* hyperlinks positioned over buttons, I can simulate the pushing of a button (by clicking the button with the mouse) and have the PowerPoint presentation jump to a slide that contains the display screen page that will be shown when the button is pushed. This allows me to simulate the actual screen changing that an operator would see if he were standing in front of the machine. It makes a great teaching tool!

**Here's how you do it!**

If creating slides from scratch (like the example below), first create the various slides representing the control functions you wish to demonstrate. If using an image file to show display screens (created from the control, from a digital camera, or a scanned from a photograph), insert each image to a different slide. To do this click on the "Insert" function and then click on "a

From this slide – click here



This slide will be displayed!



**PowerPoint Tips** (continued from pg 1) picture from file” from the menu that pops up.

If working with slides created from scratch, select an image to represent each button (it could be one of PowerPoint’s standard buttons or just a rectangle). If working from an imported image, create an *invisible rectangle* over the button in the image. To do this, create a rectangle over the button and give it “no fill” and “no line” attributes. *Right* click on the button element and choose “Action Settings” from the menu that pops up. Click on “hyperlink to:” and choose “slide...” from the list of choices for the hyperlink. Choose the slide number that contains the control screen page you want the button to access.

From this point, when the slide show is displayed, clicking on the button will have PowerPoint display the slide linked to the button. Note that you can create hyperlink buttons on every slide, meaning you can truly emulate all important display screens just as they will be shown on your CNC control!

#### Check it out on our website!

You can download two samples that demonstrate these techniques. One is for the example shown on the previous page (slides created from scratch). We’ve got the four most important soft keys working on all pages. The other is for the example described by Dennis Barrette, including two very impressive bitmap images. To find the samples, from our home page ([www.cncci.com](http://www.cncci.com)), click on Books and Publications. Then click Instructor Notes Newsletter. You’ll find the example downloads under the Winter 2001 issue link.

#### Publicize your school

We maintain a **schools forum** on our website ([www.cncci.com](http://www.cncci.com)). It’s free – and it’s a great way to let potential students know about your CNC-related courses!

Simply fill in an online form that asks for some general information about your CNC courses, lab equipment, and degree information. About half the schools currently listed are using our CNC curriculums to help them teach CNC courses!

The first step... (continued from pg 1) comes from local industry, you’ll want to make sure that your courses match the needs of companies in your area.

If your school does not have such an advisory committee, our most important recommendation is to start one. Given the fact that you’re largest potential student base will come from companies in your area, you must treat local companies as your most important customers. Respond to their needs and they’ll send students to your courses! When working with people from local industry, let them help you set objectives. Here are a few questions to ask:

#### **What do you want students to know when they’re finished with this course?**

Make them be specific. If the answer is “We want them to be able to run such-and-such a machine”, ask them what specific tasks a person must master in order to run the machine. Now the answer may be more like “We want them to be able to load and unload workpieces, adjust offsets for the purpose of holding size, and perform tool maintenance when tools get dull”. Again, the more specific the answer, the more concise the objective can be.

#### **What are your biggest causes of scrap parts and other mishaps?**

Knowing the most common problems that local industry is having will help you incorporate specific training objectives to minimize or eliminate them during your training course. You’ll be able to place extra emphasis on trouble-prone tasks.

#### **What questions do your people have on a regular basis?**

It’s likely that someone in the company (possibly the CNC programmer) is constantly bombarded with questions. Knowing what questions are most commonly asked will help you develop objectives that will answer the most common questions.

#### **How do you rate your company’s CNC machine utilization levels?**

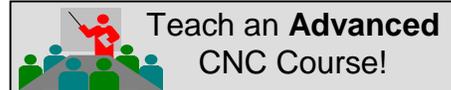
While many people in industry may feel that their company is doing pretty well, you may hear about some bottlenecks that will help you create objectives related to improving efficiency,

especially when developing more advanced courses.

Admittedly, these questions are pretty basic, and it’s likely that you can come up with many more that may be more appropriate to your needs. But the most important point is to get help. Too many instructors think they’re developing appropriate objectives – when in reality – they’re out of touch with local industry!

#### **Involve your past students**

Placement rate is one great indicator of how well your CNC program is being accepted by local industry. But look beyond placement rate by staying in contact with your past students. After being in industry for a while (six months or a year), they’ll be able to relate – in very frank terms – how well you prepared them for the “real world”. Do more than just post a response page on your school’s website. Contact past students by phone and let them tell you about their experiences!



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## Favorite analogies

You can't have enough analogies in your basket of teaching tools. Analogies make it easier for students to understand complex topics by relating them to things that are familiar and easier-to-understand. In these discussions (which will be included in each issue of *Instructor Notes*), We will relate a few favorites. Note that these analogies are commonly incorporated right into the slide shows included with our curriculums.

## Slowing down over-anxious entry-level students

by Rob Alford

Hi Mike I just finished reading your instructor newsletter with great interest. I would like to share an analogy that I use on my over anxious beginning CNC students. Living here in beautiful Daytona Beach, FL, almost everyone is a NASCAR fan. When I get students who want to progress to a level "we aren't ready for yet", I ask them who their favorite driver is. After they tell me, I ask the student if they think that driver went to the speedway and did 180 mph as soon as he got his drivers license. "Of course not" is the answer. I can then stress the importance of "going slow" for a while, until the fundamentals are well covered and understood. Thanks for the great newsletter. Your website is always interesting to visit.



It happens that both of the analogies we show in this issue are related to NASCAR.

## Stressing possibility versus feasibility

Here is an analogy I use when teaching my course on setup reduction. I use it to stress the relationship between feasibility and possibility, but this analogy can be applied whenever you want to show the need for any kind of justification. Like the previous analogy, it happens to relate to NASCAR.

When discussing the principles of setup reduction, I'll be saying something like, "Given unlimited resources, it is *possible* to achieve zero setup time. However, just because something is possible, doesn't mean it is *feasible*."

"Say you go out to your car this afternoon and find that it has a flat tire. How long will it take you to exchange the flat tire with your spare? Your trunk is cluttered, you haven't had to fix a flat in years, and you don't know where the jack is – or even where it gets connected to the car. So you have to pull out the instruction manual and start reading. It may take you the better part of an hour to change the tire!"

"But you know there are people that regularly change a tire in under ten seconds. In fact, they change all four tires in under ten seconds. These are, of course, NASCAR teams. While you and I cannot justify doing much to reduce tire-changing time, for a NASCAR team, it is *feasible* to do whatever it takes to get tire changing time down to the bare minimum. The faster they can change tires, the better their chances of winning a race."

I then tell students to compare this to what they know about making setup related improvements. While it may be *possible* to achieve zero setup time, it may not be feasible. The cost and effort related to achieving zero setup time may be too much to pay

This analogy also helps me explain one of the factors that makes justification possible. I'll ask something like, "What makes it feasible for a NASCAR team to minimize tire changing time?" The answer is, of course, related to urgency. If they can't minimize tire changing time, they won't win any races.

In similar fashion, one manufacturing related justification method (among others) is related to urgency. As a company's customers demand shorter and shorter lead times, it becomes more and more important to minimize through-put time. This, of course, includes shortening setup time. "Consider, for instance, a company that boasts next-day service. If they can't provide the product on the day after the order comes in, their customers will go elsewhere. That's urgency!"

This analogy also provides a great lead-in for other methods of justification, including cost based justifications and new process justifications.

## What are your best analogies?

If you'd like to share a favorite analogy, just let us know and we'll publish it in a future issue of *Instructor Notes*!

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