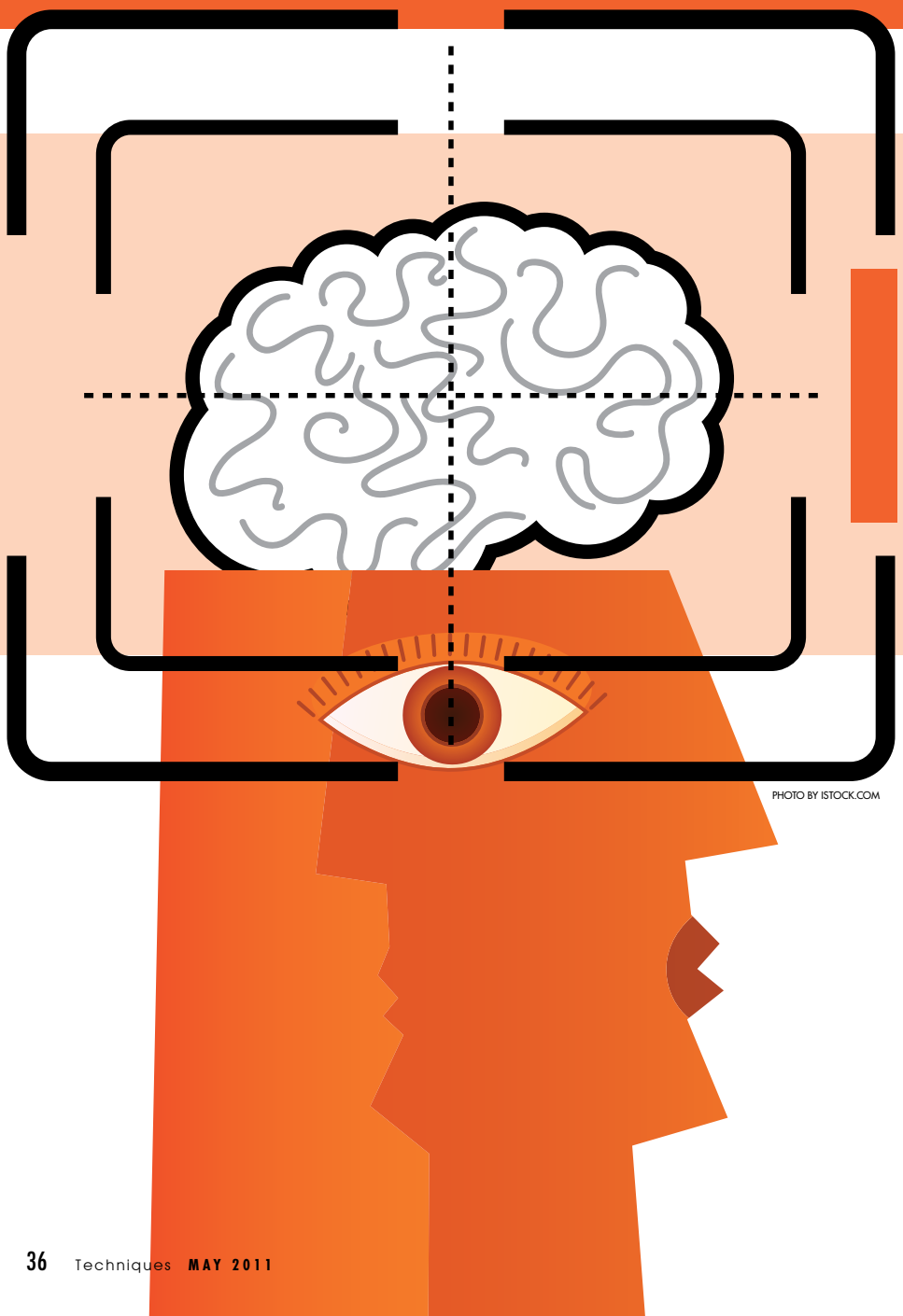
Learning That's "Just Good Enough," Isn't



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BY JOYCE CYMBER

Six Sigma. When I first heard this term, I knew it wasn't the name of a sorority. I figured it was math related and remembered it in connection with manufacturing. I recalled hearing about yellow, green and black belt projects. A few years ago, I attended a workshop presented by a consultant who had taught Six Sigma to high school students in a summer math, science and technology camp. I immediately made the connection for our students in career and technical education (CTE) at the Board of Cooperative Educational Services, in Fairport, New York. What if

students here could be taught a new way of developing their problem-solving skills, apply it to their CTE classroom experiences, and ultimately the workplace? They certainly would become better employees with a powerful grasp of how to work as a team to improve productivity. And so began our school's journey to achieve yellow belts. We began Lean Six Sigma with a few pilot programs four years ago using Perkins Tech Prep funds.

The consultant introduced the concept to students by asking: "Is 99 percent good? We have heard this just about everywhere: I am 99 percent confident; it is 99 percent guaranteed; I am 99 percent sure." Students' heads nodded in agreement. The consultant prodded, "However, is 99 percent really good?" In reality, the more you do, the worse 99 percent is. Suppose your heart worked 99 percent well, so that every hundredth time your heart would skip a beat. Suppose you walked at a 99 percent capable rate, so that every hundredth step you would fall. Suppose the airline industry had a 99 percent safety rating, which would mean that 1 out of every hundred flights would not land safely. Now is 99 percent really good?" The students acknowledged it was not good enough. Our students were mesmerized. However, this was only one of the concepts our students learned: to never accept anything as "just good enough."

Problem-Solving Skills

Many of our students lack problem-solving skills. As teenagers, they tend to blame external forces or other people when something goes wrong, instead of trying to understand the root cause to prevent it from happening again. That is the major reason we started teaching the Lean Six Sigma methodology for problem solving. This methodology is used worldwide and allows for practitioners to define, measure, analyze, improve and control a situation to understand the root of a problem, to solve it and to prevent it from happening again. Our Six Sigma course is designed to teach students the different phases of the methodology, and then to identify a problem of their own that they encounter in the classroom or in their career field and solve it.

For example, our New Vision Medical Careers students looked at how blood gets from Rochester General Hospital's blood bank to its cancer unit and then made suggestions on how the process might be improved. Our Radio and Television Broadcasting students identified that the editing process in making a client video took too long. Students worked in teams to scope this problem and then used the methodology to solve it. The training culminated with comprehensive reports stating the problem, the phases of the project and the solution. Each student presented a phase of the project and how his or her team solved the problem; it was impressive.

This new way of thinking helped students to not only solve the specific problem at hand, but know any problem can be solved if it is addressed in a systematic way. This lesson can be used for problems at school, at work or at home. The students learned to look at root causes for problems rather than to dodge the blame, or put blame on someone else, and were able to transfer this skill to all areas of their lives; one student was able to come up with a better way to help her younger brother get to school on time.

Empowerment of the Students

Students often believe that they are powerless to fix situations or that their solutions may fall on deaf ears. Before they start to embrace problem solving, they need to believe that their solutions will be heard. Often young people don't feel that they have the authority to make decisions, or change things that they feel are wrong or bothersome. Because of this, instead of doing something to make things right, or encourage change, they simply go with the flow, and complain the entire time.

If they felt that their ideas would be heard and implemented, they would be more eager to help with the solution. This training empowered them and provided confidence in their problem-solving capabilities. It allowed students to determine the problem, understand its magnitude, determine root cause, and then identify viable solutions. Often, there were multiple solutions, and sometimes, the solution was out of the students' control. The solutions that students identified were placed into two categories: those that the students could control, and those that the students could not control. In other words, some solutions may require a capital purchase or a process change that is not easily implemented. Those would be put under the category of "no control." The other solutions were ones that could be implemented by the students within their area of responsibilities. Those would be put under the "control" category.

The students were encouraged to develop solutions that they could control, as well as not control, so that the solution could be implemented to solve the problem. Once the students understood that they were empowered to come up with solutions, even ones outside of their responsibilities, they were more likely to get involved and work hard on the problem

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and the solution. The students were then encouraged to put the solutions that they were responsible for in place and present to a higher authority those solutions that were out of their control.

Transforming the Students and Teachers

The methodology of continuous improvement has had a dramatic effect on our students—empowering them to solve problems, to get involved with the definition and solution of the problem, and to take the skills that they learn to all classes, their personal lives and professional lives. However, what was equally dramatic, and unexpected, was the effect on our teachers. After the training, many teachers stated that they changed the way they thought about their students and the way they taught. The teachers were amazed by what the students could achieve given a little empowerment. Yet these students not only grasped the concepts taught, they tackled problems that had been plaguing the classroom.

PHOTO COURTESY OF JOHN WALKER

New Vision Medical Career students earn Six Sigma Yellow Belt Certification.

One example involves seven students in our Collision Repair program who tackled a persistent problem in the shop: cleaning the paint guns that were used on cars. The paint guns rarely got cleaned, and when they did, they were not cleaned well. The paint guns would gum up with dried paint and be unusable. The teacher often found himself cleaning the paint guns during his lunch period or after school. He had tried for years to get his students to do a better job of cleaning the paint guns with no luck. He even posted step-by-step instructions on the walls of the shop to try to get better results. The seven students took on this project as part of the Lean Six Sigma problem-solving methodology. They defined the problem, determined the root causes (including their own laziness!), and then developed a new process for cleaning the guns, which involved reorganizing the paint gun station. The teacher adopted their suggestions, and the group then trained the rest of the students in the proper way.

The teacher was amazed at what his students had accomplished; something that he had struggled with for years was solved by the very students he was struggling to teach. The teacher realized that the students could do so much more on their own if they were taught the strategies and given the authority to get things done. It transformed the way he prepared his lesson plans and the way he taught his students.

Train the Trainer

When we began the pilot, the concept was foreign to our teachers, so we arranged for a consultant to instruct the whole course for each of the pilot pro-

grams. With tight budgets, we could not sustain Six Sigma in this manner. So, we offered a train-the-trainer course where the teachers themselves would first learn the methodology, then be able to teach it to their students. The teachers saw the results, embraced the methodology and taught it the following year. They experienced great success, and from there, the word spread; soon, more teachers began to request training so that they could teach it as well.

The student course is generally eight hours long, and is a hands-on interactive learning environment where the students learn a problem-solving concept, then apply it to an actual problem that they had scoped. Each concept takes 20 minutes to teach, and the resulting workshop then takes about 45 minutes as the students tackle their problem. Now we have 10 teachers involved; the "fever" has caught on!

Student Response

Students clearly see the value in learning problem-solving strategies. Will Goodness, a junior in culinary arts, stated, "I learned that we generally look at problems as having one cause…Six Sigma looks at the entire process and identifies multiple problems in the process. It can be applied to whatever you do." Danielle Thompson, a visual communications student, agrees. "In the end it makes you see things you wouldn't typically notice…we want to blame the problem on one thing rather than looking at the situation and figuring out the different things that can be changed."

Many students commented on seeing a more creative side of their peers and valued teamwork in the problem-solving process. John Lander, a program graduate, earned an associate degree in collision repair and is currently employed with a windshield replacement company. Lander explained that he works on commission and used his new skills to set up the tools and equipment for his work van. "Having an organized system to access my tools allows me to work faster. The faster I work, the more money I make."

Having an Impact

Our students learned life lessons in problem solving and also gained the confidence through empowerment to tackle large problems—making them the leaders of tomorrow. The teachers learned a lot about their students and what their students were capable of achieving. Students and staff alike are proud to have earned their Yellow Belt Certification. T

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