Engineering stereotypes drive counterproductive practices

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To engineering students, scenes like these might sound familiar: students splitting up group projects so they don't have to work together. One student bragging that he did the problem without following the directions but still got the right answer. Another student bragging about how he did the whole project in the hour before class.

It's practices like these that many students believe will help them become expert engineers — but it's the same practices that are the ire of managers who hire recent engineering graduates.

These are the findings of a study done by Paul Leonardi, the Breed Junior Chair in Design at Northwestern University's McCormick School of Engineering and Applied Science, with colleagues at the University of Colorado. The study was recently published in the *Academy of Management Journal*.

"Industrial advisory boards are always saying engineers come to the workplace with good technical skills but they don't work well on team projects," says Leonardi, assistant professor of industrial engineering and management sciences and communication studies. "We wanted to know why. It's not a lack of skill — engineering students are smart people. So why aren't they working in teams?"

The study, conducted over several years, included interviewing more than 130 undergraduate engineering students and observing lab sessions and group project work time in order to study the culture of

undergraduate engineering.

What they found was that when students entered engineering schools, they already had an idea of what an engineer should be from television programs and other media.

"There's a stereotype that engineers do things by themselves," Leonardi says. "So when students are asked to work in teams, they think, am I going to be disadvantaged? When I go to the workplace am I not going to be as valuable?"

In other words, students believed that if they weren't able to do a project alone, they couldn't consider themselves an expert engineer. Leonardi and his colleagues often saw groups splitting up group work, even if they were specifically asked to work on it together at the same time.

Researchers also found that when professors gave out documents that detailed exactly how to build something, students would often throw them away and try to figure it out on their own — another practice that stems from the stereotype that engineers should be able to figure out problem solutions on their own.

"They would figure out workarounds and try to reintroduce more difficulty into the task," Leonardi says. "It was a mark of distinction not to follow the task." This was often partnered with what researchers called "delayed initiation" — i.e. procrastination. But students didn't procrastinate because they were lazy — they procrastinated in order to prove that they could figure out the problem in a short period of time.

"All these practices were very counterproductive to working in a team," Leonardi says. Researchers even found that freshmen at first wouldn't engage in such practices; once they saw older classmates doing it, however, they, too, would take the social cues and engage in the

practices. All the while, students would continually justify their actions as "that's what engineers do," and continued justification made the practices seem that much more natural.

To combat this, professional societies often say that engineering schools should put more team-based projects into curriculum, but Leonardi argues that isn't enough.

"The change we need is helping to put new kinds of stereotypes and images of what it means to be an engineer into the culture so students can reflect on those and think about changing their work practices to align with what we really want engineers to be," he says. "It's important for organizations to get involved with engineering education, providing internships and co-op opportunities, because it allows students to see early on other images of engineering so they can see that there are images of engineers out there other than the expert loner."

Source: Northwestern University (news : web)