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# Making New Learning Opportunities for Kids and Teachers!

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"So, why do I need to know this? When will I ever use this"? Like many of you, I heard the following questions hundreds of times during my prior twenty-year career as a high school Mathematics teacher in Boston 1968-1988. "So, why do I need to know this? When will I ever use this"? These were not easy to answer. My abstract examples didn't ring true to my students. They could hear that I was making them up, not speaking from my own personal experience. But also, it didn't ring true to their experience, either the experience they had or the ones they were likely to have.

At least one half of this equation improved when I did an internship at Data General in the summer of 1978. Data General was then one of three leading Minicomputer manufacturers in the world. I worked in the customer training department, which was responsible for developing and delivering week-long intensive courses for customers and employees on the design, operation, and repair of the company's minicomputer products. It was the heyday of the industry and we delivered a long list of courses and served hundreds of learners every week.

I was part of a small team of trainers and course developers, managed by the departmental manager. The first big change for me after 10 years as a high school teacher was that our group actually worked together. We planned together, divided up the work, and executed together. We met project timelines and goals. We published our work, deployed it in courses, solicited customer feedback, and revised.

While much of this work was writing, editing, and presenting, much of it was also math, logic, design, and engineering. When I got back to the high school classroom that Fall, and for my next decade, my students' "existential" queries often elicited "authentic" responses from me. I now had stories to tell, not just of my own work, but of scores of engineers and technicians from companies all over the world that came to Data General Customer Training.

That helped. Some of the kids now heard me. At least I sounded convincing and authoritative. But what about them? Wouldn't the same experiences be beneficial for them?

It would take a lot longer for educators and policymakers to provide such experiences for our students. The first national pilot programs in the emergent School-to-Work program took place only in 1991, in Boston's Pro-Tech program for the health professions. The passage of the 1994 School-to-Work Opportunities Act has led to many efforts all over the country to provide work-based learning opportunities for students.

Our company, Autodesk, Inc., the world's fourth-largest software company, has had a rich experience with student interns. Close to 300 students in the past 5 years have worked productively in full internships, leading to paid work and often spanning several years. Interns have worked at our help desk, information systems, marketing, quality assurance, engineering, and other departments doing technical work. They have been part of project teams and work under the supervision of a manager -mentor. These engaging, real-life projects teach students the importance of advanced mathematics, science, and technology, as well as teamwork, problem-solving, communication, and interpersonal skills.

Intern Dan Goldman was typical of many. He interned for 5 years at the Help Desk, answering technical questions for users of computers and the company's network. "Before I hated school," Goldman told National Public Radio in an April 27, 1998, interview. "But as a result of the internship, I started to take initiative and my grades soared." (http://www.npr.org/programs/morning/archives/1998/980427.me.html) Students at Autodesk say they "learn by doing and being creative," "learn life skills that help you decide

what to study in college," "do real work," and "get respect from adults." They say they learn how "to talk to and relate to people with suits and ties," "how to take a job and manage it on your own," "learn communications skills, get things done, meet deadlines and solve problems." They contrast this to their school experience and complain that "teachers give you busy work, while at Autodesk you are motivated to produce."

You can read their stories and those of their managers on the Autodesk Foundation web site at http://www.autodesk.com/foundation/stc/ and http://www.autodesk.com/compinfo/dyf/dyfmain.html. The latter URL is Autodesk's Design Your Future program which encourages middle school girls to pursue careers in math, science, and technology.

Managers at Autodesk are extremely enthusiastic about the intern program. They call the students "productive," "indispensable," "diligent and conscientious." One manager wished that "when I was a high school student I would have loved to have a real job in a real company, and to be around adults." Isn't this different than how we as high school teachers often see our students? Is there some magic in the real-world workplace, particularly in companies of the "new economy" like Autodesk, that turns teenagers into "young adults?"

The high school intern program has been a win-win for the students and for our company. Students get a lot out of it, and so does the company. Managers see the internship program as a way to give back and be connected to the community, as well as to meet the recruitment and long term diversity goals, both race and gender, of the company. And the recent study from the National Employer Leadership Council found that our company was one of several high school intern programs that received a positive Return-on-Investment (ROI). That case study can be downloaded from our web site.

The quotes above come from focus groups held in June of 1997 with Autodesk managers and interns. Since then much progress has been made in launching local School-to-Career partnerships in California that broker the connections between schools and businesses. As a result, many schools now integrate work-based learning internships into their curriculum in a productive way, connected to the curriculum and linked to projects whereby students report on their findings and reflect on their learning experiences. Sir Francis Drake High School in San Anselmo, CA, a partner school of the Autodesk Foundation, does a superb job in its academies through ten-week long internships at area companies that tie back to both individual student interest and school-based projects. (see http://drake.marin.k12.ca.us/academ/pbl/pblfs.htm).

Students, and their teachers, benefit greatly from new workplace learning opportunities. My own internship at Data General not only enhanced my teaching, but led me into multiple career paths within K-12 education and school reform. In Northern California, organizations like Industry Initiatives for Science and Math Education (IISME) develop and coordinate summer fellowships in industry for teachers. (see http://iisme.ucsc.edu/).

"So, why do I need to know this? When will I ever use this"? Get yourself and your students into the workplace, link your teaching and your students' projects to the real world, and you might not hear this question too much. But when you do, both you and your students will be able to provide some answers.

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