WHAT DOES IT TAKE TO SUCCEED?

“What It’s Like to Be a Pioneer”

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Introducing system dynamics and systems thinking into a school is not easy. In fact, it can sometimes be a frustrating experience. We hear about teachers who have succeeded, and their schools provide examples for others to follow. But what about those teachers who have tried and not succeeded? What can we learn from them?

One teacher who has been in both situations has agreed to share her story. She started out in a school where system dynamics and systems thinking eventually became an integral part of the curriculum and school culture. As one of the first two teachers in the school with system dynamics training, she watched as more teachers became curious about the approach, saw the benefits for kids, and sought training for themselves. Over the years, there have been setbacks along the way, but somehow the growth process in this school has kept going.

Looking back, the teacher can attribute the steady progress to three factors.

- First, there was very strong support from a forward-looking administration. One person had heard about systems thinking in other applications and was willing to take the chance that it could bring improvement to his school. The administrators never “pushed” these new ideas onto teachers, but they did convey their enthusiasm for the accomplishments of students and teachers who gave them a try.
- The second factor was time. Teachers were given time for training workshops in the summer and for collaboration during the school year. Our teacher gave in-service workshops and mentored teachers who wanted to go further. Block scheduling helped too.
- Finally, there was adequate technology, both hardware and software, to do a good job. The administration wanted to use their new computer lab for “learner-centered, high-level thinking applications to enhance students’ learning.” They encouraged the teacher to write grants which secured much of the school’s technology, they provided funding for STELLA, and they made the lab easily accessible to teachers and their classes.

Once progress got rolling, it became its own positive reinforcement. Because the administrators were open to change, they encouraged system dynamics which then became an instrument of further change. As more teachers became interested, the training and collaboration increased, bringing other teachers along. As the useful application of technology increased, the school was awarded grants to buy more computers. Surprisingly, the students themselves became “ambassadors for change” as they took what they had learned in science classes and applied it in other classes, making the connections for teachers. Students also garnered recognition for their work at a regional exhibition. Parents began requesting placement at this school based on the systems opportunities for students. Systems education may be small still, but it is there to stay.

That’s the success story. Two years ago, our teacher moved to another school and faced an entirely opposite set of circumstances. Convinced by experience that system dynamics could fundamentally improve education for kids, she hoped that she could introduce it in her new school too. Unfortunately, she had little success. As before, she used system dynamics and systems thinking with her students, she explained the ideas often to other teachers and administrators, she wrote and received a small technology grant, and she mentored a few teachers in their classes. However, it seemed a losing battle against inertia the whole way.
The factors that had fostered growth in the first school worked to stifle any change in the second.

- There was inadequate administrative support for change. Although the superintendent voiced interest, she referred the new teacher to the academic council, a body whose tacit goal was to oppose any change in the curriculum. Teachers in the school were also very resistant to change; they seemed to feel that they did not have time or support for anything new. This response was understandable; the school had had five principals in two years and many other issues to address.

- There was no time to learn or share new curriculum ideas. Teachers were expected to substitute during their preparation periods, in addition to teaching six classes.

- Technology was an obstacle. The computer lab was used exclusively for keyboarding and only one other teacher integrated any technology into the curriculum. The technology committee disapproved of laptops; the math department even discouraged using calculators. Our teacher had one computer for her class and a STELLA site license (from her grant), but it took the school three months to install the software on the library computers where her modeling lessons had to be taught. She was not allowed to write a larger technology grant. The idea of system dynamics, or any technology in the classroom, seemed a threat to this very traditional small school.

Our teacher recently decided to leave this school for one which sought her systems skills, although she is “sad to leave behind so many wonderful, bright students before having the time or energy to reach them all with even just an exposure to systems thinking.” She has had the unusual experience of working at two schools at opposite ends of the continuum: one very open to change, the other strongly resistant to anything new. And, she has learned a great deal which may help the many other innovative teachers who find themselves at schools somewhere in between.

- Once she had seen her students flourish with the learner-centered systems approach, she could never go back to the lecture mode again. Holding a vision of how much better education could be keeps you going.

- Don’t try to do too much at once, especially if there is resistance to change. Maybe she should have just focussed on her own classes in the hope that “other teachers would look in to see what is going on as they hear rumblings.” Change takes time.

- Let the kids, and their parents, be “ambassadors for change.”

- Use whatever technology you have while scraping for more. Without computers, start with behavior over time graphs and causal loops. With one computer, build models as a class (although it is not truly learner-centered until kids do it themselves.)

- Find support among other teachers in the broader systems education community.

- Finally, “the hardest thing about this whole ST/SD endeavor is convincing people that it is a good thing, that it is useful, and that it can enhance our kids’ learning in K-12 education….It seems that people who truly believe this have to be pioneers.” Success comes in the long run if you can stick with it. Good luck!

Jay Forrester has suggested that we could speed the spread of learner-centered-learning and system dynamics in K-12 education by sharing tales of “what it’s like to be a pioneer.” It might help others who are starting out, or just curious, to know about other teachers’ experiences, positive student outcomes, pitfalls, political issues, responses of administrators and fellow teachers, student and parent feedback, triumphs and tribulations. Forrester has long experience in pioneering, first as an early inventor of the digital computer, then as the founder of system dynamics, and now as an education reformer. This paper presents just one vignette. Please let me know (LyneisD@cle.tiac.net) if you have other tales to share. Thanks.