

WHAT'S THE RUSH?

“What It’s Like to Be a Pioneer”

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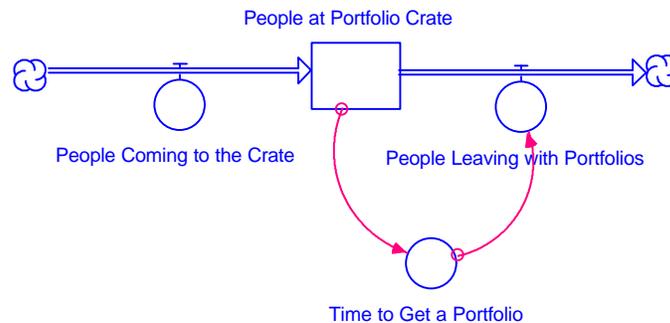
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Here is a practical application of system dynamics, powerful in its simplicity.

Dan Barcan's seventh and eighth grade students at the Murdoch Middle School, Public Charter School of Chelmsford, Massachusetts store their work portfolios in a crate at the back of the classroom. Whenever Dan asked the students to get their portfolios, they would swarm to the back of the room and mob the crate, pushing and shoving all at once to find their own folders. Although this was typical behavior for young adolescents, it was disruptive and it wasted too much class time. In an effort to help students retrieve their files more systematically, Dan tried the usual classroom management tricks like repeatedly reminding students to be more orderly and appointing student monitors. Nothing made much difference.

Then, one day when the students were crowded around the crate making especially slow progress getting their folders, Dan called a time-out. He quickly led students through a discussion that produced this stock/flow diagram on the board:



The stock is the number of people crowded at the crate. People approach the crate and leave with their portfolios, but in this class it had not been a smooth flow in and out. Why not? The students figured out that the time to get a portfolio is longer when there are more people crowded around the crate. It is harder to find a folder and get out of the way with everybody pushing in at the same time. In trying to get their own folders as quickly as possible, students were actually making the whole process go more slowly. This class discussion took just two minutes.

It must have made sense to the students because right away they devised a better way to get their portfolios. Some students stepped aside to let others go by. Others waited at their seats while friends picked up their folders for them. Without much confusion, they efficiently got their portfolios and got down to work. Dan was impressed.

The proof of the lesson came several days later, however. The students were seated together in an all-school assembly. When the assembly ended, most students crowded the exit as usual. Expecting to see his students do the same thing, Dan turned to see them seated patiently instead. "What's the rush?" they said smugly. "We can get out faster if we just sit here and relax until everyone else clears out of the way!" Smart kids!

These students were able to use a basic system dynamics understanding to solve a real-life problem on their own. Furthermore, they could transfer that understanding to another similar problem. Previous directives from the teacher had not sunk in. As Dan says, "Nothing that I had

done which was just language-based had let them see the connection between what they did and what happened.” The stock/flow diagram helped them make that connection and use it. Granted, these students had some prior experience with system dynamics modeling and stock/flow diagrams, but it seems reasonable to expect that other students could also use these tools to understand and solve real-life problems once they have seen how things work.

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 little vignette. Please let me know (LyneisD@clexchange.org) if you have other tales to share. Thanks.