

How System Dynamics has changed the way I teach

The qualities that all educators can benefit from



By Gordon Kubanek

for K-12 Systems Thinking & Dynamic Modeling Conference 2002

- running in my wheel
running in my wheel
running in my wheel
running in my wheel
stop
look around
running in my wheel
running in my wheel
running in my wheel
running in my wheel
slip and fall out of my
wheel
get back in my wheel

The Hamster



Teachers often cannot
See the Forest for the Trees

• A good teacher perceives and does not react to
• **'The Manager Syndrome'**

- Teachers are so "busy" that
 - they burn themselves out emotionally and physically
 - **don't take appropriate control**, which results in replacing the "equation"

• **Better teaching = better learning**

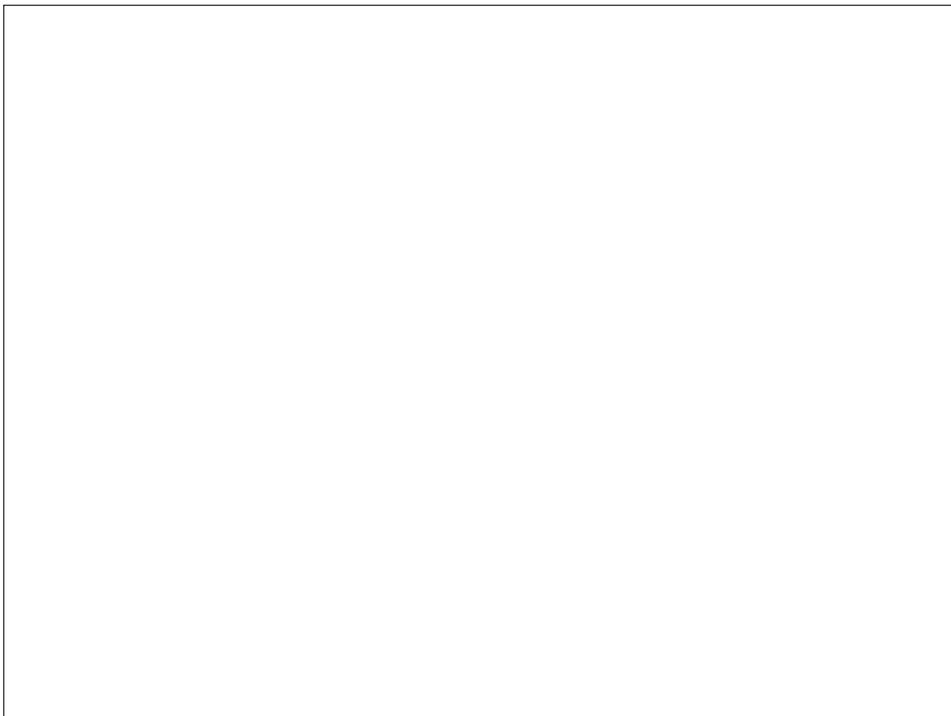
• with

appropriate control

High Expectations

- Can an analog computer be used to simulate a network?
- While researching this I found SD...
- Nortel supported me in taking the MIT Roadmaps course
- 2000 Lunch & Learn
 - A probing of Attrition & Complex Projects using a Systems Perspective

Nortel 1998 Teacher Intern



SD is more than modeling - there must be “more to it”

New Zealand 1999 Conference

{+ *Systems Science*}



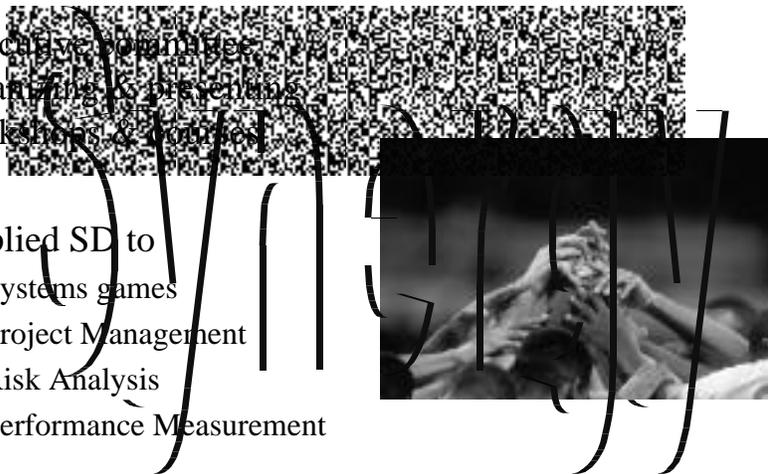
- The jet could not land in Wellington so midnight in the Pub in Auckland I met Rod Brown & Kim Warren
- Is it a **Maori** Funeral Business or a Funeral **Business** run by Maories?
- My eyes were opened. I was hooked.

more to it

Synergy

Ottawa SD Group 2000-present

- Executive committees, organizing & presenting workshops & courses
- Applied SD to
 - Systems games
 - Project Management
 - Risk Analysis
 - Performance Measurement

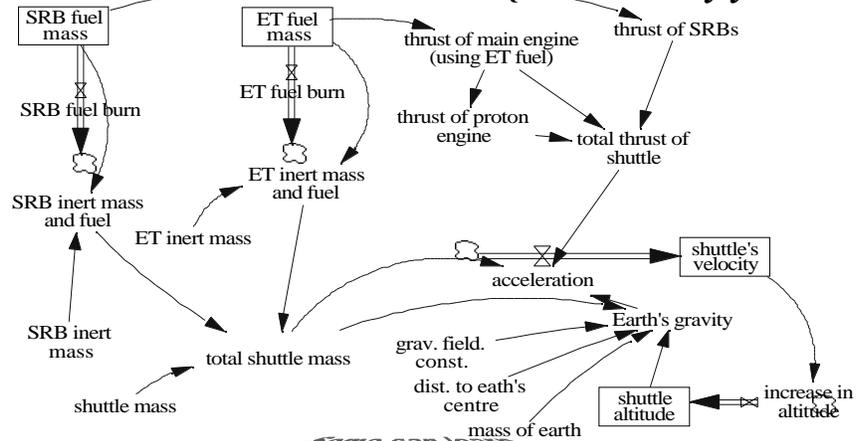


Educators have a lot to offer to the field

SD attracts a certain temperament - some Kids can learn SD very quickly

Senior Independent Project 2000

{& done every year since}



- Modeling of
 - chemical reactions, rockets, urban sprawl, subsidized housing
 - CLD or stock & flow

Social Interaction breeds passion for SD
& then Students enjoy SD

Dynamiquiest 2000

The first year the student only observed



- The HS kids we so impressed with the “little kids” that we:
- formed a Simulation Club to do SD projects
 - we’ve met almost every Monday lunch since
- formulated a HS senior for credit course
 - Simulating Society

Luck is with the Bold

Atlanta 2001

SD Skills Inventory



- I wrote a report suggesting that some form of Quality control for all the self-taught SD practitioners is in our self interest...and was not shot down!
- Working with models gives you
 - the courage to go against the tide and
 - to state your insights with confidence

Interdisciplinary

Think Out of the Box

Metacognition: knowing what you know

SD Skills Inventory 2002

I worked to build upon Daniel Kim's SD curriculum

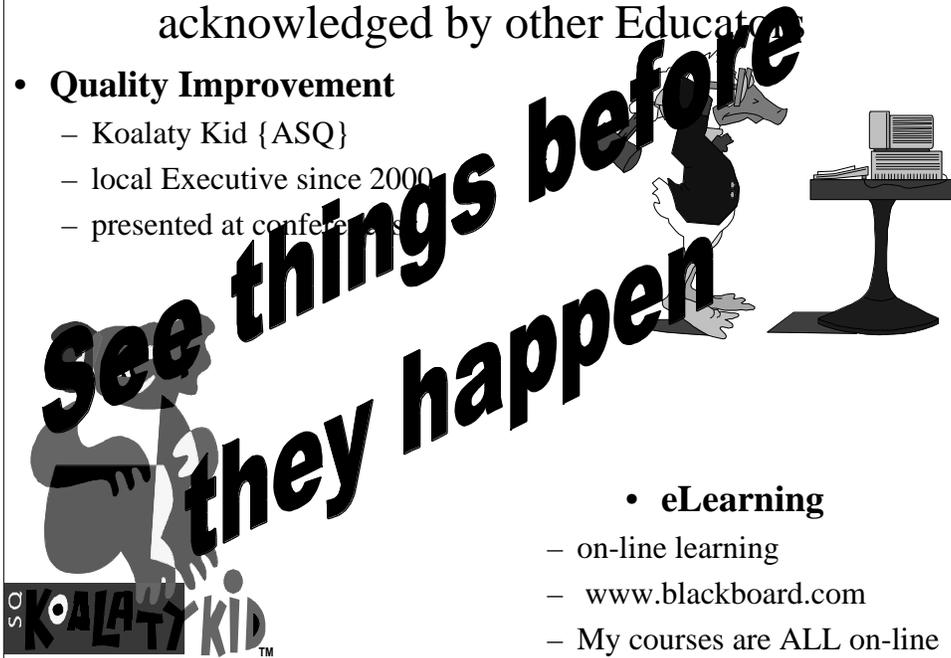
Dimension	Novice	Advanced Beginner	Competent	Proficient	Expert
Systemic Work					
Complex Modeling					
Application					
Complex and					

- Systemic Design and Modeling, is a **trans-discipline**. This skill only becomes meaningful when applied to a problem found in a particular field.
- This means that the typical ways of measurement knowledge and skill level do not apply.

Systems Thinking led me to 2 activities that are acknowledged by other Educators

- **Quality Improvement**

- Koalaty Kid {ASQ}
- local Executive since 2000
- presented at conferences



- **eLearning**

- on-line learning
- www.blackboard.com
- My courses are ALL on-line



Extend yourself

Policy Dynamics Inc.



- I am going outside my comfort zone

• I am learning

- This is the only way to

grow

- Most teachers NEVER do this

teachers who only teach have stopped learning

In Conclusion

- Doing SD
 - results in personal growth
 - reduces teaching stress
 - means more fun with the students
 - *is relatively easy...*
- But convincing other Educators that SD is relevant
 - worth the time investment
 - is very difficult!***

