HARVARD GRADUATE SCHOOL OF EDUCATION

Systems Thinking for Educational Transformation

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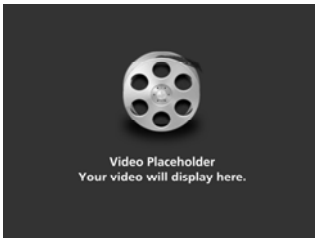
Objectives



- To provide a brief introduction to *"systems thinking"* for education leaders.
- To encourage you to think systemically about the work that you do.

Readings

- Fullan, Michael (2005). ***Leadership and Sustainabilty: Systems Thinkers in Action.*** (Newbury Park: Corwin Press)
  - ❖"The Starting Point" Pp 1-11
  - ❖"Leadership at the System Level" Pp81-98
- Senge, Peter et al (2000). ***Schools That Learn: A Fifth Discipline Handbook for Educators, Parents and Everyone Who Cares About Education.*** (New York: Double Day)
  - ❖"Orientation" Pp 3-19
  - ❖"A primer on the Five Disciplines" Pp 59-98
  - ❖- "Systems Thinking" Pp231-253.

The Five Disciplines of a Learning Org

1. Personal Mastery	Self focus, life-long learning
2. Mental Models	Self reflection & inquiry
3. Shared Vision	Mutual purpose
4. Team Learning	Group interaction skills
5. Systems Thinking	Understanding complexity; linkages, interdependencies

From "Schools That Learn" by Peter Senge et al)

Mental Models

"Mental models are deeply ingrained assumptions, generalizations, or even pictures or images that influence how we understand the world *and how we take action"*
-Peter Senge

"…new insights fail to get put into practice because they conflict with deeply held internal images of how the world works, images that limit us to familiar ways of thinking and acting." -Peter Senge

"The image of the world around us, which we carry in our head, is just a [mental] model. Nobody in his head imagines all the world, government or country. He has only selected concepts, and relationships between them, and uses those to represent the real system." -Jay Forrester

Systems Thinking

"Systems thinking is a way of understanding reality that emphasizes the relationships among a system's elements, rather than the elements themselves."

A system is: "An interconnected set of elements that is coherently organized in a way that achieves something". -Donella H. Meadows

A key principle of systems-thinking is the idea that the "sum is greater than the sum of its parts."

1+1=3

Why is systems thinking important?

- Increasingly complex world that we all live in
- Increasingly complex education landscape
- Accelerating change
- Many of our shortcomings in education can be explained by a lack of alignments among key system components
- Shift in education goals and objectives
  - From: Access, Maintenance and Control
  - To: Quality, Performance and Development
- Improving education quality requires greater attention to alignments and linkages
- We need skills, methods and *the habit of mind* to better identify and understand critical alignments and linkages

Education: A Story of Misalignments

- Education systems out of alignment with evolving and changing demands of business and industry.
- Students without the requisite knowledge, skills and attitudes to find meaningful employment and participate fully as responsible citizens in community.
- Students moving from one level in the system to the next, ill-prepared to succeed at the next higher level.
- Teachers graduating from professional programs with limited knowledge of new teaching-learning methods and limited ICT skills.
- Ministry structures and processes out of alignment with the needs of schools.

Increasingly complex landscape

- Changes in the world of work.
- Rapidly evolving ubiquitous technology (ICT).
- Changes in the knowledge and skills students need.
- Changes in what we know about the conditions necessary for effective teaching-learning.
- New knowledge and theories about child development and learning theory.
- Changes in our understanding of the physiology of learning (mind-brain).

"For every complicated problem there is a simple solution…

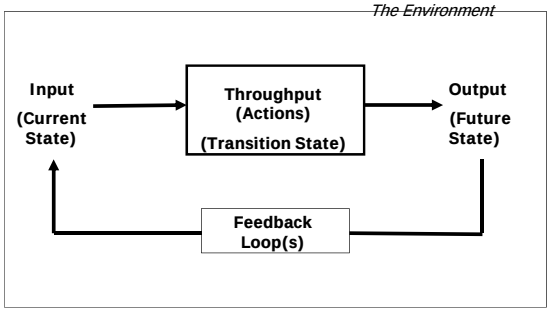
…and it is wrong."

- H.L. Mencken

What is Systems Thinking?

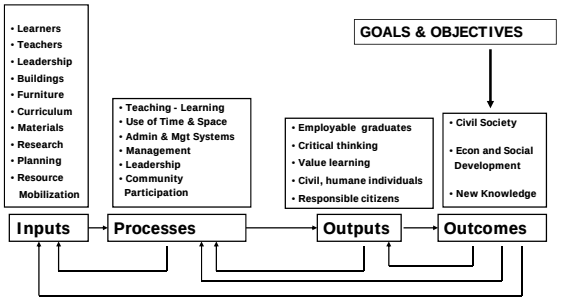
- Learning to see the "big picture."
- Learning see *dynamic* complexities, as well as *detail* complexities
- Learning to see more than an endless succession of events; learning to see, understand and use *patterns of defining structures.*
- Learning to see the short, longer-term unintended consequences
- Understanding complexity; seeing linkages, alignments and interdependencies.

"General" Systems Theory



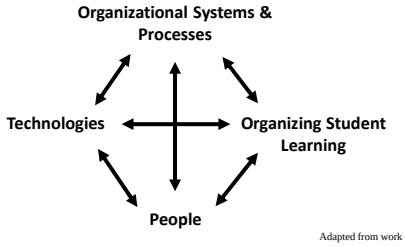
Ludwig Von Bertalanffy (1940s)

Economic, Political, and Social Context



Think systemically and dynamically

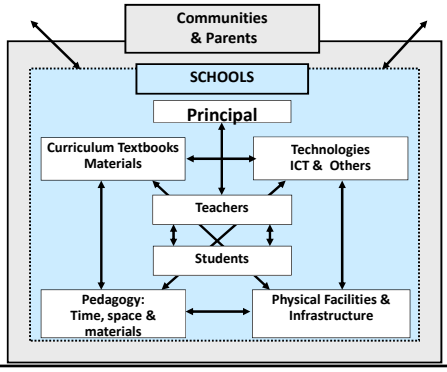
Think systemically & dynamically when managing change



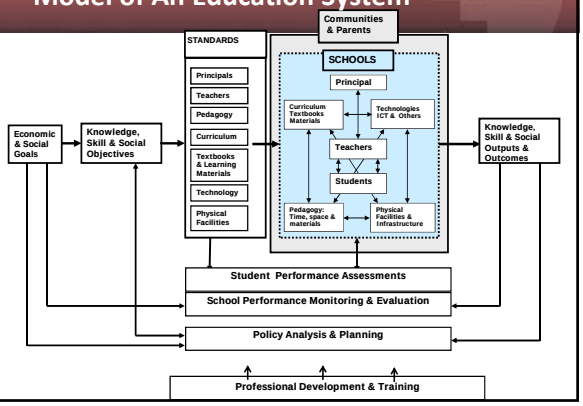
T.Cassidy

Adapted from work by Leavitt, 1965)

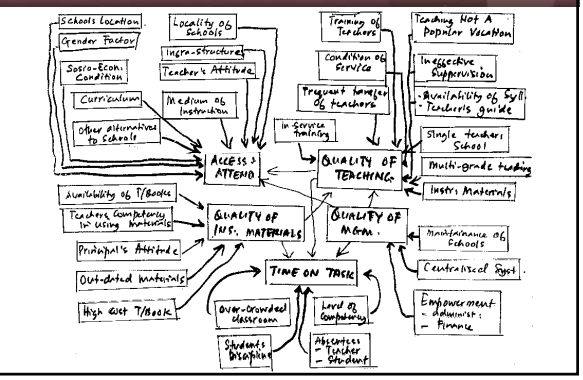
A Systems Model of a School



Model of An Education System



A Dynamic Systems Model



Another Dynamic Model

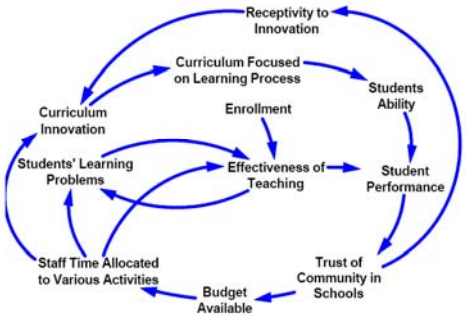


Figure 1: Overview: Model of Innovation and School Performance Gary B. Hirsch

A Final Dynamic Model Example

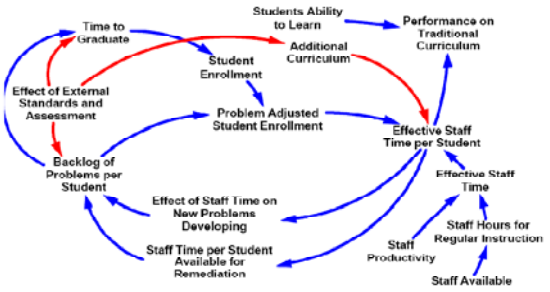


Figure 5: Reinforcing Loops That Exacerbate Problems Caused by Imposing Stringent External Standards

Gary B. Hirsch

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Your video will display here.

Systems Thinking Resource Sites

- **Creative Learning Exchange**
  - www.clexchange.org
- **System Dynamics Group at MIT**
  - http://mitsloan.mit.edu/faculty/research/dynamics.php
- **Pegasus Communications**
  - http://www.pegasuscom.com/tstpage.html
- **Mind Mapping Software**
  - http://www.mindmapperusa.com/
  - www.visual-mind.com
- **System Dynamics Software**
  - www.iseesystems.com (IThink, Stella)
  - http://www.vensim.com/ (Vensim)
- **Archtype Examples**
  - http://www.systems-thinking.org/arch/arch.htm