



Systems Thinking and Dynamic Modeling Conference
June 26-June 28, 2010
Babson Executive Conference Center
Wellesley, Massachusetts

FRIDAY, JUNE 25

5:00-9:00 pm Registration for early arrivals

SATURDAY, June 26

8:30-9:30 am Registration/Continental Breakfast

10:00-12:00 Welcome and Introductions

MYSTIC A/B

ANDREW JONES Keynote

How Your Students Can Use System Dynamics to Save the World

Public Policy can be improved by the use of system dynamics models. Drew Jones will share some of his experiences using system dynamics models and diagrams to improve public policy, on topics ranging from public health to global climate change. Drew was a student of Dana Meadows' and co-received the "ASysT Prize" for "a significant accomplishment achieved through the application of Systems Thinking to a problem of US national significance."

12:00-1:30 Luncheon

1:30- 5:00 Session I Five Workshops

1. Beginning ST Using Games and Other Technologies to Reinforce Systems Thinking — Rob Quaden, Alan Ticotsky (Carlisle Public Schools)

POTOMAC

Participants will learn Systems Thinking principles, tools, and concepts using hands-on, engaging, classroom-tested games and activities. Lessons are suitable for all age levels and are appropriate for beginners through intermediate practitioners. Activities will be adapted to the needs of the participants.

2. Introduction to Dynamic Modeling — Anne LaVigne, Systems Thinking in Schools, Waters Foundation, George Richardson, SUNY Albany

SUSQUEHANNA

This session is intended for individuals who have some Systems Thinking background and would like to explore the basics of dynamic modeling software as a way to represent a system. Participants will become familiar with basic icons of STELLA® software (stocks, flows, converters, connectors, and graphs) in order to build simple models that demonstrate linear and compounding growth. They will expand the compounding growth model into a population/resource model and then compare linear and non-linear models. If time allows, participants can also explore simulations of other generic models that are freely available online. Please bring a laptop computer for this session. If you don't have one, it may be possible to share with another participant.

3. SD/ST Tools for School Leaders: Creating a Culture and Climate for Sustainable SD/ST Integration in Classrooms Using SD/ST Tools — Tim Lucas (Lehigh University)

MYSTIC A

School Leaders are faced with many challenges. Supporting and

integrating the use of SD/ST into classrooms to improve learning requires leadership and a school culture that embraces sustainable instructional literacies. This session will explore specific SD/ST tools that building and district school leaders can use to model and create this culture. Over the past decade, we have worked with diverse school leaders translating the work of Doug Reeves, Roland Barth, Michael Fullen, Jim Collins, Daniel Pink, Peter Senge, and others into SD/ST tools and best practices. Join us for an exploration of some of these tools and share your own best practices.

4. System Dynamics Modeling and STEM — Diana Fisher, Portland Public Schools, Portland, OR

THAMES

From physical science, to life science, to math, the motion detector and system dynamics models help students understand dynamics, feedback, and patterns. Participants will build models involving resource depletion and predator/prey interactions, among others. Participants should have a laptop computer for this intermediate level workshop.

5. How Do We Measure Systems Thinking and Learning? — Krystyna Stave, Heather Skaza (University of Nevada at Las Vegas)

MYSTIC B

This workshop addresses the linked issues of how to design effective interventions for systems learning and how to assess their effects on student thinking. It has three parts: a presentation of research testing the effectiveness of systems simulations in an introduction to environmental science course, a review of current approaches to assessing Systems Thinking, and a participant-focused discussion of your experiences and issues.

5:30 Cocktail Hour

Come and say hello to **Jay Forrester, Dennis Meadows, George Richardson, Jim Hines and Peter Senge**, pioneers in the field of system dynamics, all with an intense commitment to education.

WOODSIDE ROOM

6:30-7:30 Dinner

7:30 After-dinner Video of Donella Meadows' Keynote at the 1993 K-12 Systems Thinking Conference in Tucson: *What our Children Need to Know for the 21st Century*

MYSTIC A/B

This video of Dana Meadows recalls her timeless wisdom for all of us in our search for the right way to teach our children to be systems citizens now and in the future.

SUNDAY, June 27

7:00-8:30 Breakfast

8:30-10:00

MYSTIC A/B

KEN KAY (Partnership for 21st Century Skills): Keynote
How Does Systems Thinking Fit in with 21st Century Skills?

This two-part keynote session will start with Ken Kay explaining the work of the Partnership for 21st Century Skills, its role in systemic educational change and how systems thinking fits into the 21st Century skill set.

10:30-12:00

MYSTIC A/B

KEN KAY AND PETER SENGE (SoL Education Partnership): Keynote

Discussion of Systems Thinking and System Dynamics as Learning for the 21st Century

The second part of this morning's session will feature a discussion among participants and between Peter Senge and Ken Kay about the interconnection amongst 21st Century Skills, Systems Thinking and educational change.

12:15-1:30 Luncheon

1:30-3:00 Session II Seven Parallel Sessions

6. Systems Thinking: A Key 21st Century Skill in K-12 Education — Andrea Davidson (Catalina Foothills School District), Joan Yates (Waters Foundation and Catalina Foothills School District)

CHARLES

Learn how and why one school district's community members and educational staff came together to include Systems Thinking as one of the 21st century skills deemed essential to their K-12 students' success. Explore components of Systems Thinking professional development, assessment rubrics and curriculum used within the district during the past two years.

7. Hands-On, Minds-On Systems Thinking for Active Learners — Tracy Benson (Systems Thinking in Schools Project, Waters Foundation)

POTOMAC

Participants will be involved with several hands-on exercises that will incorporate the use of Systems Thinking Habits cards and ST visual tools (e.g., feedback loops) into debrief sessions. All exercises are appropriate for adult and student learners.

8. Creating Online Simulations for the Classroom with STELLA and izee NetSim — Joanne Egner and Jeremy Merritt (izee systems)

THAMES

During this hands-on workshop you will create an interactive learning environment with STELLA and publish it online using izee NetSim wizard. Come see how easy it is to create web-based simulations and learning environments for use in your classroom. Both new and current STELLA users are welcome. Please bring a laptop computer.

9. Getting Insight about Environmental Issues by Practicing Causal Loops — Zerrin Doğanca (Bogazici University, Turkey)

MYSTIC B

The session will include two lesson plans, two stories addressing a systems approach in different contexts, exercises of causal loop diagrams related to issues in the stories, and a discussion about the results obtained in an experimental design with fifth grade Turkish students. The context of the session is based largely on environmental issues like conservation of species and effect of pesticides on living organisms. This study has been applied to students with no experience in system dynamics. Hence, participants at all levels will be welcome to this session.

10. Plateaus and Climbing Peaks: Putting Systems Thinking Into Action — Kim Gimblett (Gridley Middle School, Tucson)

SUSQUEHANNA

Follow me through my first years' journey in Systems Thinking. Education can be a powerful means for initiating or reaffirming a person's sense of responsibility for the environment. To get my students outside and interacting with the beauty that exists around us is a priority in changing their perspectives and can lead to an increased understanding of stewardship and ecosystem sustainability. Connecting the intrinsic human relationship within our youth with nature is complex, but includes establishing the Systems Thinking framework into the observation of natural events as a routine exercise. Harnessing students' desires to be involved in digital technologies while getting them outdoors leads to new potential. Technology will be our leverage to enable students to participate in social networks and informal learning environments that will encourage new participation in science across the curriculum.

11. Haig Dynamics, A Dream in the Making... System Dynamics Club at Earl Haig Secondary School — Yannick Ngana (Earl Haig Secondary School, Toronto)

SHANNON

Haig Dynamics is a student-lead System Dynamics club at Earl Haig Secondary School. The session will share the journey and the experiences of Haig Dynamics, including the rationale of the being of the club, its mandate, as well as its goals and objectives. It will also consist of a recapitulation of the achievements of Haig Dynamics, including the topics discussed, and any feedback from students regarding System Dynamics.

12. The Egg Mobile– Introducing Systems Thinking in Environmental Education — Renata Pomponi, Kris Scopinich (Mass Audubon Society) Linda Booth Sweeney
MYSTIC A

Mass Audubon's Drumlin Farm Wildlife Sanctuary strives to foster connections between people, land, and wildlife in ways that allow our visitors to develop and act on their own conservation ethic. We have recently introduced system dynamics concepts to effectively communicate the interdependencies present in sustainable farming practices and to develop Systems Thinking abilities in our preschool and K-5 program participants. The session will provide an overview of our process for integrating Systems Thinking in our education programs as well as curricular tools developed to demonstrate the interconnections between farming, soil health, and the larger environmental system.

3:30- 5:30 Workshops

How Does a System Dynamicist Think?

JIM HINES (Ventana Systems) — MYSTIC A

DENNIS MEADOWS (Laboratory for Interactive Learning) — POTOMAC

GEORGE RICHARDSON (SUNY Albany) — MYSTIC B

A group of three individual workshops will be led by these internationally known System Dynamicists. All are master teachers who will share their unique ways of delving into problems, using a system dynamics mindset. Assignments to individual sessions will be provided at registration.

6:30-7:30 Dinner

7:30-9:00 After-dinner Forum

How Can System Dynamics Guide our Thinking about Education? — Larry Weathers (Belmont Public Schools), Ralph Brauer, P. Jeffrey Potash, John F. Heinbokel (CIESD)

MYSTIC A/B

The situation for public education in this country is critical. Can system dynamics (with its "stocks" and "flows" and feedback thinking) inform past failures and success and perhaps suggest better questions and alternatives for the future? Bring your ideas and issues to an open discussion of the role of system dynamics in education policy and learn about what others have been doing.

MONDAY, June 30

7:00-8:30 Breakfast

8:30-10:00 Session III Six Parallel Sessions

13. Using Games to Explore and Understand Climate Change Dynamics — Linda Booth Sweeney
MYSTIC A

How do we talk to students about climate change? Perhaps one of the best ways is to talk less and experience more. In this workshop, we will engage in several activities from "The Systems Thinking Playbook: Climate Change Games," an adaptation of The Systems Thinking Playbook. K-12 teachers, university faculty, and corporate consultants have, for many years now, used the short gaming exercises in the Playbook to illustrate the subtleties of complex system behaviors. Come join fellow educators as we try out a set of newly adapted games for use with students in climate change-related learning and other developmental situations.

14. Using New Technologies to Help Build Community: Illustration Using Personal Finance Curriculum — P. Jeffrey Potash, John F. Heinbokel (CIESD)

SUSQUEHANNA

It is vitally important to reach beyond our locales to develop "community" with diverse educational stakeholders. Our efforts to collaborate with distant colleagues have been greatly aided by a number of relatively new technologies. We will illustrate the use of tools such as isee's NetSim, Adobe ConnectPro and Adobe Presenter, which have allowed us to reach out to students and colleagues. We will also invite participants to explore the potential for such applications in areas of personal or professional interest.

15. Successive Improvement—How Have We Done It? What Are the Markers of Our Failures and Triumphs? — Kathy Scheppe, Donna Rishor, Brenda Blomquist (Gridley Middle School, Tucson)

CHARLES

Curious about where to begin and how to bring Systems Thinking to your school? In this session, we will explore the journey taken with staff and students at Gridley Middle School. How did we successfully and secretly implement Systems Thinking to an unsuspecting and overwhelmed staff? This session will include first steps of staff development and classroom instruction, samples of tools used, learning from students and student interviews that document our beginnings.

16. Expanding Your Tool Kit: Developing Critical Thinking Skills with System Dynamics — Torrey McMillan (White Mountain School)

POTOMAC

In this workshop, appropriate for K-12 teachers or administrators with little to no background in Systems Thinking, we will explore the use of Systems Thinking as an analytical tool to promote complex thinking, research skills, and communication. We will review a range of assignments and applications of Systems Thinking, particularly in the context of global sustainability issues such as poverty, economic development, climate change, and ecosystem health. Participants will practice Systems Thinking, including construction and interpretation of behavior-over-time graphs and causal loop diagrams.

17. Systems Academy for Young Scientists (SAYS) Pilot Summer Program — Rudy Reyna (PREP, San Antonio), Andi Guerrero (Carrizo Springs Consolidated ISD), Ben Jurewicz (Consultant, San Antonio)

MYSTIC B

The Systems Academy for Young Scientists (SAYS) pilot summer session consisted of a 5-week enrichment program offered to elementary students to explore ST/SD. This session will discuss the design of the program, the model, the implementation including budget, timeline, etc., lessons learned, results and plans for 2010. This session is geared towards elementary level teachers and administrators.

18. Building the Big Picture: Developing Systems Thinking Tools with Young Children — Barbara Casanova, Caryl Crowell, Molly Reed, Ginger Snider (Borton Primary School, Tucson)

THAMES

In this session, four educators from Borton Primary Magnet School will share how students' use of Systems Thinking tools develops across the curriculum as they move from kindergarten to third grade, highlighting how each year of our students' experiences with Systems Thinking tools leads to deeper understanding of concepts and increasing sophistication in different areas of the curriculum. We'll also share how our collaborative inquiry into Systems Thinking nurtures our individual and collective professional growth.

10:30-12:00
MYSTIC A/B

JIM HINES Keynote
It's Models All the Way Down

Modeling is what being human is all about. A poem, an historical account, a curriculum, one's knowledge of a friend— all models. In the broad sense, models are what we know, what we teach, and what we learn. Juxtaposing system dynamics modeling with other forms of modeling provides insight into both.