USING A
SYSTEMS
ORIENTATION
IN EVALUATION

BEVERLY PARSONS
INSITES
WWW.INSITES.ORG
Learning Outcome

• Apply selected system concepts to the phases of evaluation
Evaluation Phases with a Systems Orientation

Phases of Evaluation

- Design Evaluation
- Collect Data
- Make Meaning from Data
- Shape Practice
Focus on Phase 1 – Design Evaluation
Systems Definition and Selected Concepts

- Systems Definition
- Two Types of Systems
- System Dynamics
- Systems Thinking
Basic Definition of a System

A system is an interconnected set of elements that is coherently organized in a way that achieves something.

Examples of Systems

- Schools
- Forests
- Sports
- Communities/Neighborhoods
Networks
System Dynamics Related to Certainty and Agreement

- **Unorganized** (random)
- **Organized** (planned, controlled)
- **ADAPTIVE** (self-organizing, organic)
Habits of a Systems Thinker

- Seeks to understand the big picture
- Observes how elements within systems change over time, generating patterns and trends
- Recognizes that a system's structure generates its behavior
- Identifies the circular nature of complex cause and effect relationships
- Changes perspectives to increase understanding
- Considers an issue fully and resists the urge to come to a quick conclusion
- Surfaces and tests assumptions
- Considers how mental models affect current reality and the future
- Uses understanding of system structure to identify possible leverage actions
- Considers both short and long-term consequences of actions
- Finds where unintended consequences emerge
- Recognizes the impact of time delays when exploring cause and effect relationships
- Checks results and changes actions if needed: "successive approximation"
Focus on Phase 1 – Design Evaluation

Phases of Evaluation

- Collect Data
- Make Meaning from Data
- Shape Practice
- Design Evaluation

InSites
A Support Network for Learning and Change
- Actors involved
- Processes
- Products
- Information
- Goals
- Systems
- Connections

Courtesy of Matt Keene
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OR Paint Demonstration Program

Paint Market

Manufacturers

Retailers

Consumers

Paint Management System

Collection

Transportation

Disposal

Recycling

Reprocessing

Energy recovery

Flow of Paint

Flow of Information

Flow of Funds

Assessment

Evaluating

Collection

Transportation

Disposal

Reprocessing

Paint Care (APR)

OR DEQ and METRO

Paintcare (APR)

Assessment

Evaluating

Materials

Organizational

Groups

Courtesy of Matt Keene
mattkeene222@gmail.com
Fuzzy Logic Model (Systems-Oriented Logic Model)

Courtesy of Matt Keene
mattkeene222@gmail.com
Focus on Phase 2 – Collect Data

Phases of Evaluation

- Design Evaluation
- Collect Data
- Make Meaning from Data
- Shape Practice
Focus on Phase 3 – Make Meaning from Data
IGERT SUN Logic Model (Student & Program Focused)

Goal
Train doctoral students who can see beyond the boundaries of traditional methodologies and disciplinary viewpoints, and who can integrate scientific excellence with societal and policy insights.

Inputs
- Funding from NSF
  - Faculty instructors
  - Faculty/peer mentors
- Core coursework with concentration in solar energy
- Students w/ diverse backgrounds and interests
- Assistantships & tuition funding for fellows

Outputs
- Activities/Participation
  - Recruit students from traditionally underrepresented groups
  - Provide interdisciplinary research opportunities for students in sustainable energy science; site visits
  - Train faculty mentors on the challenges facing underrepresented students
  - Provide workshops, seminars, journal club on science writing, critical thinking, quantitative methods, entrepreneurship, and responsible conduct in research
  - Poster and video competitions
  - Networking opportunities
  - International experiences

Outcomes – Impact
- Short Term
- Medium Term
- Long Term
  - Participants will make connections between coursework and career goals
  - Participants will develop skills in communicating about energy science, technology, and policy content.
  - Participants will increase their interdisciplinary research skills
  - Participants will develop related education and leadership skills
  - Participants will develop core technical knowledge/skills
  - Participants will conduct dissertation research that addresses an interdisciplinary foundational energy challenge.
  - Participants will graduate from Ph.D. program in a traditional degree program within engineering, natural, or social science with a concentration in energy
  - Program contributes to the next generation of renewable energy innovators and thought leaders; citizen scientists

Assumptions
- Ongoing communication between participants, faculty mentors, and peer mentors. Participants and faculty mentors share research interests. Participants desire to obtain a Ph.D. in a traditional field with concentration in energy

External Factors
- Family, financial, or health issues that may prevent participants from applying, matriculating, and finishing a Ph.D. program

Early logic model developed by ASU internal evaluation team
IGERT SUN Logic Model with Systems Focus Added

InSites’ addition of system features to first logic model
InSites’ sketch of system-oriented logic model using site visit data
InSites’ evaluator and graphic facilitator’s noodling about graphic (fuzzy logic model)
SUN SCALABLE SUSTAINABLE PROGRAM

MINORITY STUDENT RECRUITMENT
- CA UNIVERSITIES
- OTHER

STUDENT OUTCOMES
- COMMERCIALIZED PRODUCTS
- ENERGY PHD AND PHD + ENERGY CONCENTRATION
- TRANSFORMATIONAL LEADERS
- CITIZEN SCIENTISTS

ASU
- NORMS, STRUCTURES + POLICIES THAT SUPPORT INTERDISCIPLINARY PROGRAMS
- LIFE SCIENCES DEPARTMENTS
- CHEMISTRY
- ENGINEERING
- SUSTAINABILITY
- HUMAN SOCIAL DIMENSION
- OTHER

STUDENTS
- Peer mentoring and collaborative learning and research
- Collaborative research and instruction

SUN PHD INTERDISCIPLINARY LEARNING AND RESEARCH

FACULTY
- COLLABORATION
- MENTORING

UNIVERSITY OUTCOMES
- NORMS, STRUCTURES + POLICIES
- FACULTY WORKLOAD
- BALANCE DISCIPLINARY AND INTERDISCIPLINARY COURSES
- EMPLOYER CONNECTIONS
- COMMUNITY CONNECTIONS
- FUNDING

EMPLOYMENT OPPORTUNITIES
- Establised Industries (Disciplinary)
- Entrepreneurial Start-Ups (Interdisciplinary)
- Research Labs (Interdisciplinary)

COMMUNITY CONDITIONS
- PEOPLE
- RESEARCHERS
- CONSUMERS
- POTENTIAL STUDENTS

OTHER UNIVERSITIES WITH INTERDISCIPLINARY INTERESTS

SCALE UP

SUN SCALEUP
SUN PhD
Interdisciplinary Learning and Research

Peer mentoring and collaborative learning and research
Collaborative research and instruction
Mentoring
Collaboration
Faculty
Students
SCALABLE SUSTAINABLE PROGRAM

MINORITY STUDENT RECRUITMENT
CA UNIVERSITIES OTHER

STUDENT OUTCOMES
COMMERCIALIZED PRODUCTS
ENERGY PhD and PhD + ENERGY CONCENTRATION
TRANSFORMATIONAL LEADERS
CITIZEN SCIENTISTS

STUDENTS
SUN PhD INTERDISCIPLINARY LEARNING AND RESEARCH

FACULTY
Peer mentoring and collaborative learning research

ASU
norms, structures + policies that support interdisciplinary programs

DEPARTMENTS
CHEMISTRY LIFE SCIENCES ENGINEERING
SUSTAINABILITY HUMAN SOCIAL DIMENSION OTHER

EMPLOYMENT OPPORTUNITIES
Established Industries (DISCIPLINARY)
Entrepreneurial Start-ups (INTERDISCIPLINARY)
Research Labs (INTERDISCIPLINARY)

COMMUNITY CONDITIONS
People

UNIVERSITIES OTHER
with INTERDISCIPLINARY INTERESTS

SUN PHD
SCALE UP

COMMUNITY CONNECTIONS FUNDING

EMPLOYER CONNECTIONS

FACULTY WORKLOAD

BUDGET AND RESOURCES

COLLABORATION AND INSTRUCTION

COLLABORATIVE RESEARCH AND INSTRUCTION
Focus on Phase 4 – Shape Practice

Phases of Evaluation
Site Level
Patterns of knowledge development, dissemination, and integration
QIC-EC Level
Patterns of knowledge development, dissemination and integration

OR—Neighborhood
Focus Knowledge developed and disseminated to community development specialists

CO—Wraparound
Knowledge developed and disseminated to substance abuse and treatment

SC—Stepping Stones
Knowledge developed and disseminated to disability professionals

MA—Family Specialists
Knowledge developed and disseminated to pediatricians and legal professionals

knowledge development, dissemination and integration incremental and iterative

Inquiry-based Community of Practice

CSSP
Protective Factors Collaborators

ZTT
InSites

CB
Alliance

InSites
A Support Network for Learning and Change

Related Research and Evaluation

CAN Prevention Network