A SYSTEMS APPROACH TO THE EXPLORATION OF ISSUES AS CURRICULAR CONTEXTS

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CONTEXTUALIZING CURRICULUM & INSTRUCTION

- Problems
- Projects
- Phenomena
- Cases

Issues

 Condensation on a beverage container as a problem, not an issue

• Issues as a form of PBL

Not all PBL is issue-based

WHAT IS AN ISSUE?

- Societal challenge
- No straightforward solution
- Impacts on various groups with different interests
- Complex causal relationships that are difficult to track & predict
- Incomplete information



• "Wicked problems"

SOCIO-SCIENTIFIC ISSUES (SSI)

Societal issues that connect to science

 Examples: climate change, food security, availability of water resources, genetic engineering, and the global energy consumption and conservation

 SSI as a context for science teaching and learning; a case of issue-based teaching more broadly

WHY USE ISSUES AS CURRICULAR CONTEXTS?

- Why do we teach? Help students develop the knowledge and practices necessary for their participation in society.
- Teaching isolated knowledge & skills is not enough

- How do we think about learning? Situated perspectives on knowing and doing influence my thinking.
- Contexts shape what learners can come to know and do.
- Therefore, learning opportunities ought to highlight chances to make sense of ideas and practices through the negotiation of issues that matter.

A SYSTEMS APPROACH



 Understanding how to impact education through issues based teaching necessarily involves multiple interacting parts.

A system defined by a theory of change

THEORY OF CHANGE Teacher School/district Professional /state level learning supports communities Supports Student learning Teacher Teacher • Science content professional enactment of • Science practices development SSI modules Socio-scientific reasoning **Supports Facilitates** co-design Curriculum Assessments Materials

CENTRAL PREMISE:

Teacher
enactment of SSI
modules

Student learning

- Science content
- Science practices
 - Socio-scientific reasoning



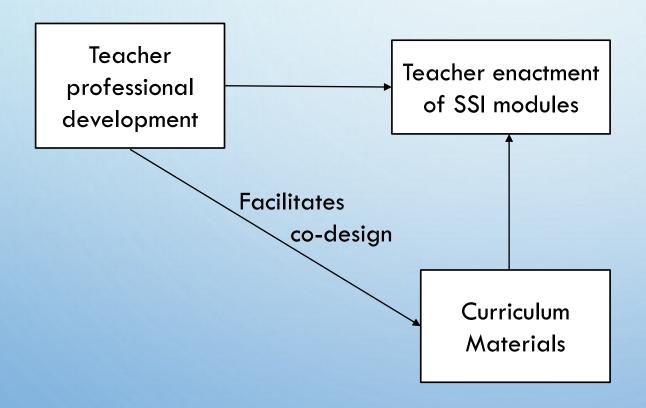
FRAMEWORK FOR **TEACHING**

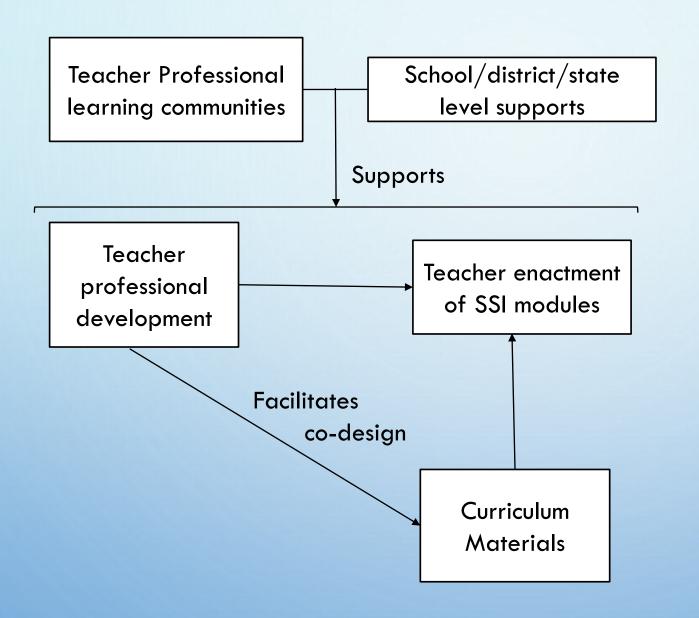
Encounter Focal Issue Connection to Science Ideas Connection to Societal Concerns Develop Science Ideas Systems thinking about the issue **Science Practices** In context of focal issue **Synthesize**

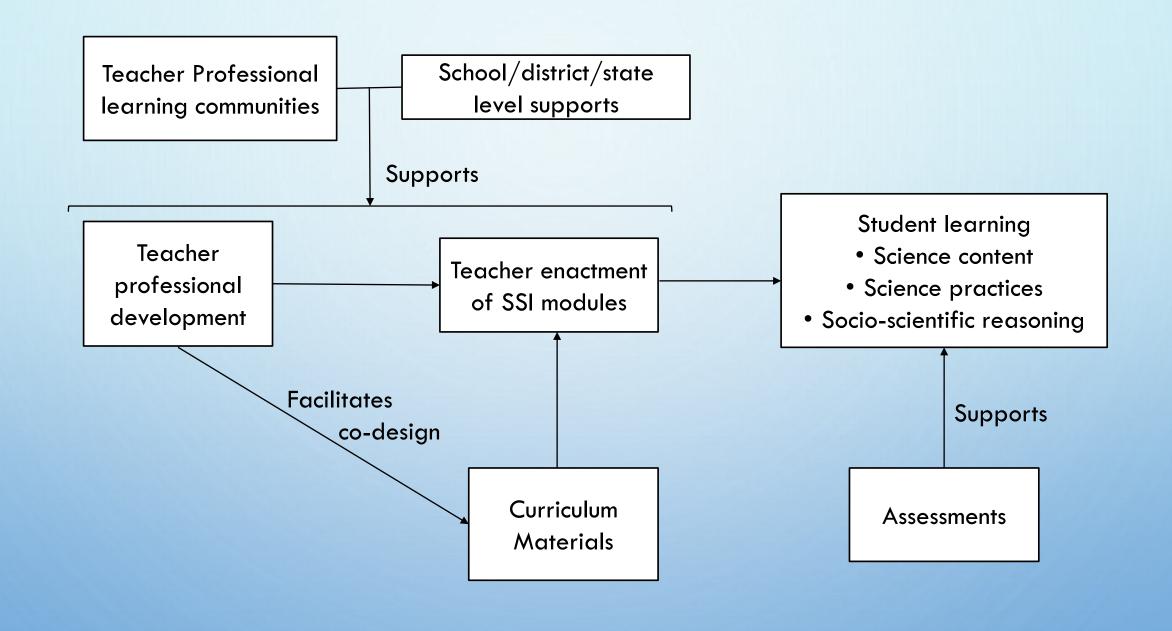
 Modules as a useful unit of instruction

Ideas, practices & reasoning through an issue focused culminating activity Teacher professional development Teacher enactment of SSI modules









AFFORDANCES OF ISSUES-BASED TEACHING: INTERDISCIPLINARITY: EXAMPLE 1



- "Contemporary Issues"
 - High School course
 - Team taught by history and science teachers
- Key outcomes
 - Communicating compelling arguments
 - Arguing with evidence (scientific, historic)
 - Media literacy

AFFORDANCES OF ISSUES-BASED TEACHING: INTERDISCIPLINARITY: EXAMPLE 2

- MONARCH unit
 - Elementary school module
 - Co-designed by 3rd grade PLC
- Areas of integration
 - Science ecosystem dynamics
 - Writing persuasive letters
 - Mathematics graphing
 - Reading



AREAS FOR FURTHER EXPLORATION

- Core teaching practices
- Assessment strategies
- New models for teacher professional learning
- Dissemination of teacher-generated curricula
- Meeting interdisciplinary learning goals



THANK YOU

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