PRIORITY: Realize the potential of STEM education with a new emphasis on coherent instructional programs and practices.

PRIORITY: Design ways for STEM education to become an integral and sustainable component of educational systems.
A NEW AND URGENT CASE FOR STEM

* PRIORITY: Pursue three goals:
  * STEM literacy for citizens
  * STEM skills and abilities for the 21st Century
  * STEM research, development, and innovations

* PRIORITY: Focus on the instructional core and development of STEM units.

* PRIORITY: Connect teachers’ professional learning and the design, development, and implementation of STEM units
* WHAT IS MY PROPOSED THEORY-OF-ACTION FOR STEM EDUCATORS?
TEACHERS DESIGN, DEVELOP AND IMPLEMENT STEM UNITS

* With complementary professional learning experiences
FOCUS ON THE INSTRUCTIONAL CORE

STEM CONTENT

STUDENT ENGAGEMENT VIA INSTRUCTIONAL MATERIALS

TEACHERS’ KNOWLEDGE AND SKILLS
THE TEACHERS’ PROFESSIONAL LEARNING SHOULD:

* Create initial dissonance between current teaching practices and those proposed for the STEM units.

* Provide, time support, and opportunities for teachers to resolve the dissonance.

* Ensure connections to teachers’ own classrooms and students.
TEACHERS’ PROFESSIONAL LEARNING SHOULD:

* Provide support for teachers’ new instructional materials and teaching strategies.

* Provide continuing support from peers and professional developers.

MEMORIZING THE PARTS OF THE LOOM VERSUS LEARNING HOW TO WEAVE
WEAVING AN INNOVATIVE STEM UNIT

What might be involved in a curriculum for teachers’ professional learning?

* Engage the teachers in designing STEM units that require new knowledge and skills.

* Allow the teachers time, opportunities, and teams of peers to explore their ideas and options for instructional activities and assessments for the STEM Units.
WEAVING AN INNOVATIVE STEM UNIT

- Provide constructive information, background, and ideas.

- Incorporate opportunities for teachers to present, test, and revise their units.

- Provide feedback on units from peers, students, and professional developers.
BENEFITS OF THE APPROACH

- Working at the instructional core enhances the possibility of bringing the innovation to scale.

- Locating the reform at the interface between teachers and students accommodates the unique needs of both.
BENEFITS OF THE APPROACH

* Expanding teachers’ understanding and strategies for instruction.

* Recognizing state, territory, and local priorities.