Research-based evolving models in STEM education: The impact on teaching and learning

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Students and teachers along the years
+ 7–2

The Magical Number (Seven, Plus or Minus Two)

Some Limits on Our Capacity for Processing Information

George A. Miller

Psychological Review © by the American Psychological Association Vol. 101, No. 2, 343-352, 1952
Outline

- Introduction
- Two research-based evolving models in STEM Professional Development
  1. developmental model of teachers’ change
  2. network model of Professional Learning Committee
- Outcomes: sustainable models
- Questions
Example I

The Evolving Model
Component I:
Three Phases of learning

Teacher as an active
LEARNER

Teacher as a reflective
TEACHER

Teacher as an INITIATOR
The Evolving Model
Component II: Stages in the Process of Change

Confusion
  Frustration
  Recognition
  Willing
  Commitment
  Fulfillments

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The Evolving Model
A Professional Learning Community (PLC) is a group of educators that meets regularly, shares expertise, and works collaboratively to improve their teaching skills and the academic performance of students.
Components and processes in PLC

- Student focused
- STEM contents
- challenge
- consulting
- initiative
- collaboration
- practice
- skills
STEM PLCs
Ice-Water glass Story
Ice-Water glass Story
The work of student A

Air (gas)  Water (liquid)  Ice (solid)
Graphic representation of the ice-water glass story

Weizmann Institute

Leaders PLC (National)

Regional PLC 6

School PLCs

Students... Students... Students...
Escape boxes for science
Graphic representation of the escape boxes story

- Weizmann Institute
- Leaders PLC (National)
- Regional PLC 3
- School PLCs
- Regional PLC’s
- Students... Students... Students...

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Network Model

Weizmann Institute

Leaders PLC (National)

Regional PLC 1

Regional PLC 3

Regional PLC 4

Regional PLC 5

Regional PLC 6

School PLCs

School PLCs

School PLCs

School PLCs

Students…   Students…   Students…   Students…   Students…   Students…   Students…
תודה רבה!!!

Thank you!!!