A Methodological Framework for Physics Education Researcher and Teacher Professional Development

Peter R. Fletcher and N. Sanjay Rebello
Physics Department, Kansas State University, Manhattan KS 66506-2601

Administrative Framework

Evolving Modeling Cycles

RESEARCHER LEVEL

TEACHER LEVEL

STUDENT LEVEL

Integration Phase: Assimilate findings into Theoretical & Analytical Frameworks
Disseminate Theoretical Results & Instructional Materials in Broader Literature

Methodological Framework

PRIMARY STREAM

SECONDARY STREAM

LEVEL vs. STAGE

STAGE 1: FACT FINDING
- Broad Research Scope
- Develop Teaching Interview Protocol
- Identify Assessment Activities

STAGE 2: TEACHING INTERVIEWS
- Investigate Conceptual Understanding
- Design Assessment Tasks
- Develop Learning Experiences

STAGE 3: FIELD TESTING
- Final Materials & Integrated Assessment

Develop Theory of Instructional Design

Integration Phase: Assimilate findings into Theoretical & Analytical Frameworks
Disseminate Theoretical Results & Instructional Materials in Broader Literature

Grounded Theory Backbone

Phenomenological Grounded Theory Approach

Data Stream

Informs

Action Research

Feedback