An Integrated Instructional Model that Links Science and Literacy in Grades 1-2

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Overview

- Systemic Issues in K-5 Science
- K-5 Science IDEAS Model
  - Architecture
  - Research Findings
- Implications of Model for K-5 Science

Systemic Issues in K-5 Science
(Issues to Address to Improve K-5 Science)

Curricular Issues

- Curriculum Not Focused on Core Ideas
- Curricular Framework not Grade-Articulated

Instructional Issues

- Instructional Time Inadequate for K-5 Science
- Day-to-Day Classroom Instruction is Fragmented/Rote

Institutional Issues

- K-5 Science Support Inadequate (Resources, Teacher PD)
- No Institutional Commitment "Value" for Effective K-5 Science
- No Comprehensive Institutional Accountability for K-5 Science

K-5 Science IDEAS Model- Architecture

Curricular Framework

- Increased Instructional Time for Science
- Coherent Curricular Focus on Core Ideas
- Grade-Articulated Structure for Cumulative Learning

Integrated Instructional Model

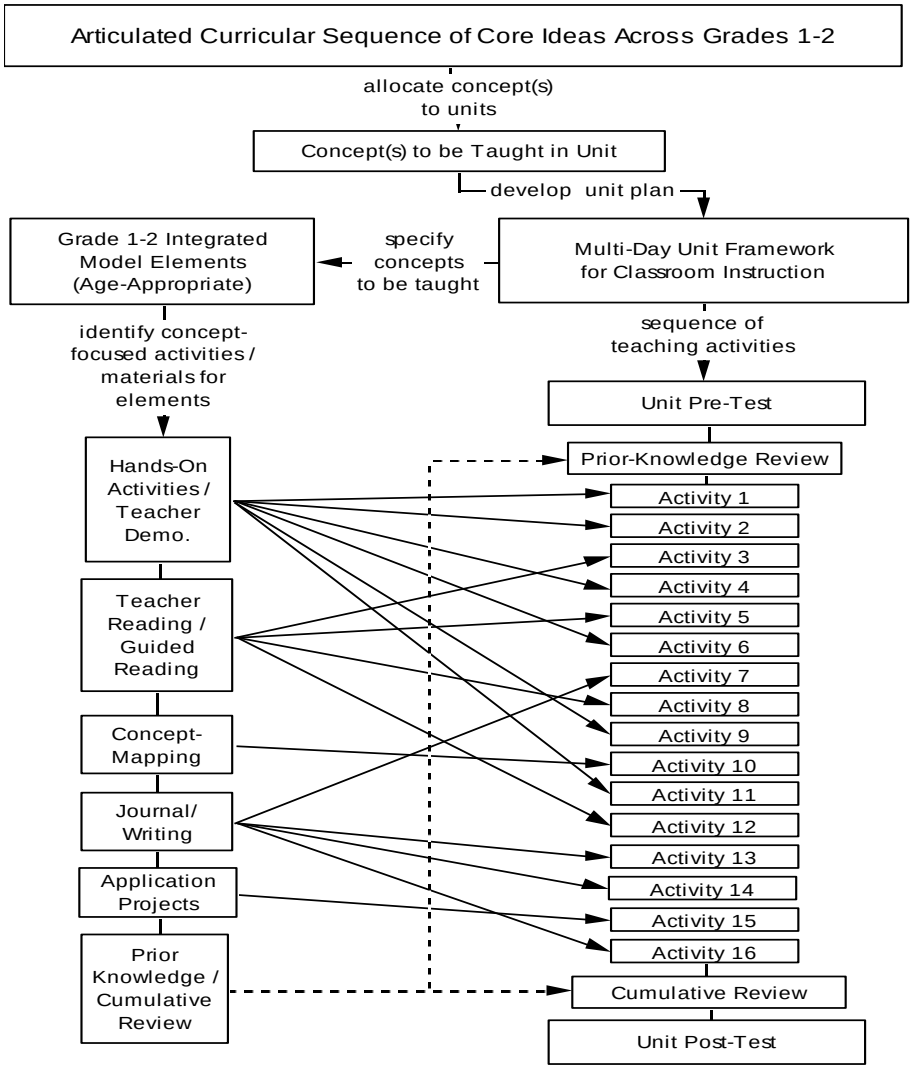
- Six Interactive Elements Focusing on Core Ideas
  - Hands-On Activities
  - Reading Comprehension
  - Writing/Journaling
  - Propositional Concept Mapping
  - Prior Knowledge/Cumulative Review
  - Applications Projects/Activities

K-5 Science IDEAS Model- Architecture

Integrated Instructional Model (Continued)

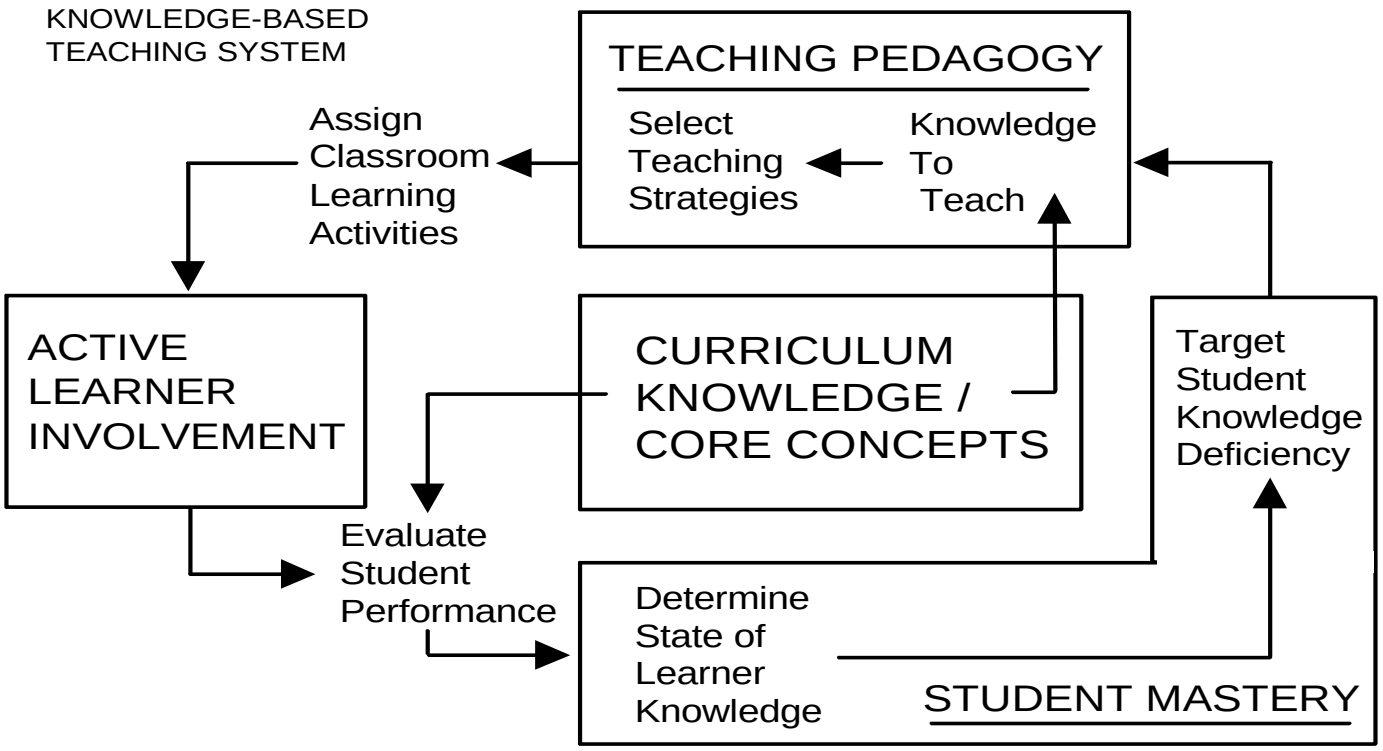
- Combination of Elements Results in Integration of Literacy within Science
- Instructional/Planning
  - Intra-/Inter-Grade Level Planning to Insure Curricular Articulation
  - Grade Level Allocation of Time to Science Instructional Units that Focus on Core Ideas
  - Identification of Available Resources (e.g., Reading Materials, Hands-Activities)
  - Identification and Sequencing of Elements within Units (Multi-Day Lessons)

K-5 Science IDEAS Model- Architecture



K-5 Science IDEAS Model- Architecture

(Interdisciplinary Foundation)



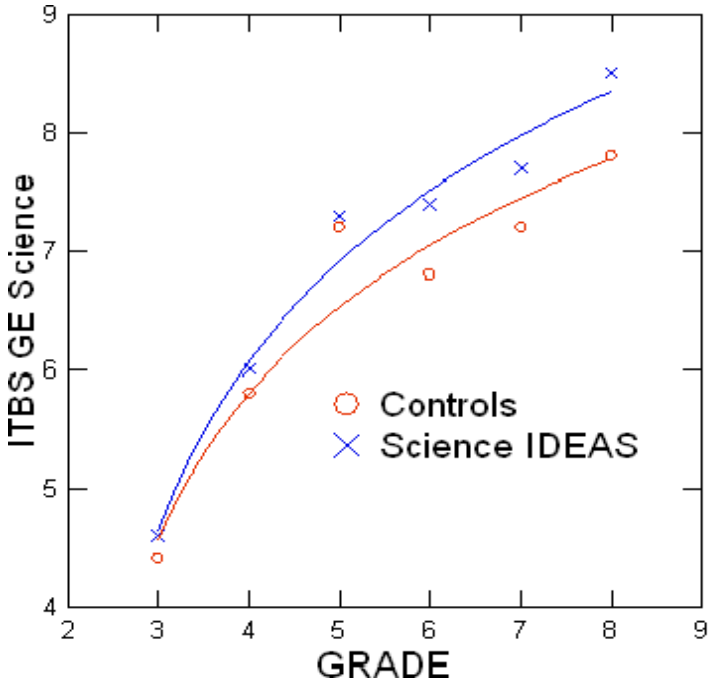
K-5 Science IDEAS Model- Architecture

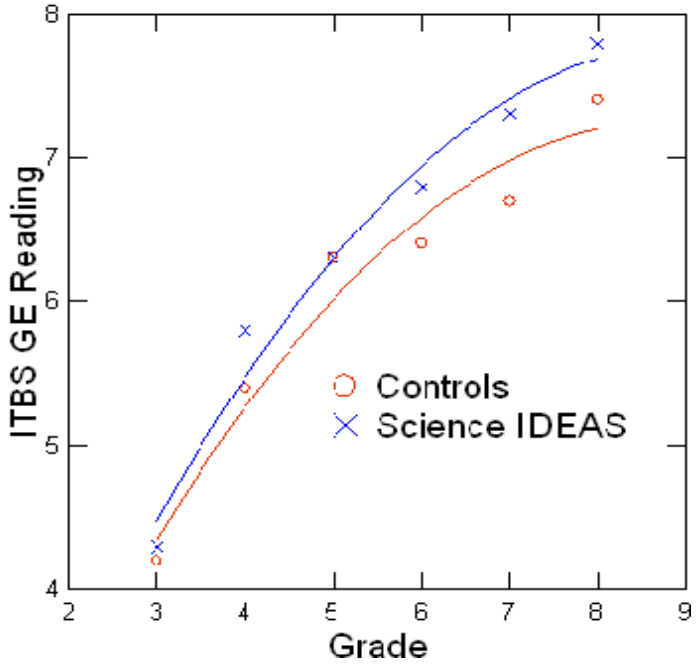
Institutional Implement Support

- Teacher Professional Development / Resources
- Teacher Leadership Cadre (for Sustainability/Expansion)
- Classroom Fidelity Monitoring (District/Principal)
- Establishing “Value” of K-5 Science Outcomes/ K-8 Accountability

K-5 Science IDEAS Model- Representative Findings

(Multi-Year Evidence in Grades 3-4-5 with Transfer to Grades 6-7-8)





Note 1- N=12 Schools (Schoolwide Implementation).

Note 2- Adj. ITBS Effects: Science (+.38 GE), Reading (+.32 GE)

Note 3- Grades 3-4-5: Direct Effects, Grades 6-7-8 : Transfer Effects

K-5 Science IDEAS Model- Findings

(Research Evidence for Primary Science IDEAS- Grades 1-2)

Prior Grade 1-2 Findings [a]

Years	Treat. Duration	N. Schools	ITBS Science	ITBS Reading
2011	8 Weeks	2	+.28 GE [b]	+.42 GE
2012	1 Year	2	+.16 GE	+. 58 GE

Preliminary Grade 1-2 Findings: Year 1 of 3 [a]

Years	Treat. Duration	N. Schools	ITBS Science	ITBS Reading
2013-14	6 Months	9	+.52 GE	+.26 GE

[a] All ITBS GE Scores Represent Adjusted (Mean) Effects

[b] Grade 1 Effect for ITBS Science in the 8-Week Study was Not Significant

Implications of Science IDEAS Model for Improving K-5 Science Instruction

1. Increase Instructional Time for K-5 Science
2. Integrate Literacy Instruction within Science
3. Focus Classroom Instruction on Cumulative Learning of Core Ideas
4. Provide Teacher PD in support of K-5 Science Instruction
5. Develop Teacher Leadership Cadre as Capacity Building Resource for Sustainability/Expansion
6. Adopt as a Major Priority In-Depth Science as a Basis for Reading Comprehension in Grades K-5
7. Explicate Institutional “Value” of K-5 Science through Strong Accountability

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