SCIENCE IDEAS MODEL SCHOOL: STRATEGIC APPROACH TO DISTRICT IMPLEMENTATION

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FOIL Meeting
Lake Mary, FL
May 16-17, 2018
Multi-Phase Implementation of Science IDEAS Model

Considering Curriculum Policy Issues based on Research:

- Importance of cumulative content-area learning to increase achievement in reading comprehension grades 1-5
- Decreasing time for science as a content-domain hinders advancing reading comprehension performance for “all” students
- Content learning requires changes in policy and practice as it relates to allocated instructional time for integrated science-reading-writing and less time for narrative reading or skill development without content
- Grades 3-5 cumulative learning impacts middle school achievement in science and reading comprehension
- Grades 1-2 results suggest the importance of early learning using integrated science-reading and writing on grade 3 achievement
Science IDEAS Model for Integrating Literacy within In-Depth Science Instruction

Instructional Elements of Model

Prior Knowledge/ Cumulative Review
Note- All Instruction begins/ involves review of prior learning

Integration of Literacy in Science

Hands-On Activities
Note- Multiple activities are used to build student concept understanding

Model Implementation

Grades K-2
45 Min./Day Integrated Science/ Literacy Instruction
(30 Min./Day Science)
(15 Min./Day Informational Reading)

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Model Learning Experiences

Instructional Focus is Always on Developing In-Depth Understanding of Science Concepts

Grades 3-5
90 Min./Day Integrated Science/ Literacy Instruction
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Recommended- 30 Min./Day Reading/Literature

Curricular Emphasis is on Cumulative/meaningful Learning of Science Concepts (i.e., Learning More About What is Being Learned)

Result is Proficiency in Cumulative Understanding, Organization, and Access as Direct Outcome Transferrable to Future Content area Learning and Reading with Comprehension

Integration of Literacy in Science

Instructional Focus is Always on Developing In-Depth Understanding of Science Concepts

Science Concept Understanding Provides a Framework for the Integration of Instructional Elements (e.g., Reading, Hands-On, Concept Mapping, Journaling/Writing, Applications, Review)

Curricular Emphasis is on Cumulative/meaningful Learning of Science Concepts (i.e., Learning More About What is Being Learned)

Result is Proficiency in Cumulative Understanding, Organization, and Access as Direct Outcome Transferrable to Future Content area Learning and Reading with Comprehension
Science IDEAS: Model School Scale Up

Overview of Three-Year Project for Establishing Two K-5 Science IDEAS Model Elementary Schools

Major Project Activities

- Principal/School
  - Grade Level Scheduling
  - Science Instruction Resources
  - Grade Level Planning

- Teacher Support
  - Summer Teacher PD
  - Science/Literacy Binders
  - Follow-Up PD/Support

- Implementation Accountability Tools
  - Classroom Implementation Fidelity
  - Student Achievement Projections

- Teacher Leadership Cohort
  - Model Science IDEAS Classrooms
  - Advanced Model Training
  - Intra/Inter School Model Support
  - Involvement in Summer PD

Project Outcomes

- Student Academic Achievement
  - Grades K-5: Accelerated Achievement in Science and Reading
  - Grades 6-8: Positive Achievement Transfer in Science and Reading

- Instructional Management for Insuring Fidelity for Science IDEAS Implementation/Troubleshooting

- Capacity Development for Project Expansion: K-5

District Implications

- Systemic Acceleration of Science and Reading Achievement: Across Grades K-8

- Accountability Tools for Insuring Implementation Fidelity and for Monitoring Student Achievement Progress

- Principal/Teacher Capacity for Providing Necessary Teacher Leadership and Support for School Model Implementation

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Follow Evolutionary Three-Phase Process

- **Initiate – Create and Fine-Tune Start-Up Model Schools** Use schoolwide implementation in model schools for capacity development
- **Establish Sustainability of Initial Model Schools** Through teacher PD, development of a teacher leadership cadre, principal leadership, grade level planning, district/area curricular support, monitoring of implementation/achievement outcomes
- **Expand Model to New Schools** Use Model Schools and Teacher/Principal leadership and Area Administrators /District Curriculum Leadership as critical resources
Requirements for Participation

Scheduling for Science IDEAS

• a daily, 2-hour block of time for Science IDEAS
  – (hands-on science activities, reading comprehension, concept mapping, writing/journaling, science projects)
• a separate 30-minute daily block of time for literature
• eliminate student pull-outs during the Science IDEAS (e.g., ESE, SAI, ESOL/LEP)
• one full day of grade level planning with a school administrator per science unit for grades 3, 4, & 5
Requirements for Participation

Monitoring Science IDEAS Fidelity of Implementation

• Actively visit classrooms to support implementation
• Complete principal fidelity of implementation clinical judgment form
• Insure teacher completion of teacher reflection fidelity of implementation form
• Adhere to project staff fidelity of implementation schedule (classroom fidelity of implementation visits three times per year: October, January, May)
• Commitment not to adopt any other major school initiative in grades 3-5 during the initial two years of the project.
Requirements for Participation

Supporting Science IDEAS Project Implementation

• **Identify** and meet regularly with a Science IDEAS coordinator at each grade level in grades 3, 4, and 5

• Insure adequate school-level instructional resources for science and reading comprehension (e.g., materials for hands-on activities, trade books and other student reading materials)

• Involve Media Specialist in the identification of unit-specific print and Internet science reading resources

• Promote the Science IDEAS project in the school via inclusion in the school newsletter, presentations at PTA and SAC meetings, and updates at faculty and grade level meetings
Multi-Phase Implementation of Science IDEAS Model

Building School Capacity and Infrastructure for Sustainability and Expansion

— **Specialized Teacher Expertise**
  • Development of teachers’ science content understanding
  • All grades - classroom implementation of Science IDEAS model

— **Teacher Leadership Cohort**
  • Serves as in-school mentors and problem solvers
  • Organizes and delivers summer professional development institutes
  • Serves on school and district curricular committees

— **Principal Leadership for Science IDEAS**
  • Support and management of grade level curricular planning
  • Monitoring and reporting implementation fidelity
Building School Capacity and Infrastructure for Sustainability and Expansion (Continued)

— District Management Capacity and Infrastructure for Science IDEAS
  • Monitor implementation status/fidelity and multi-year student achievement trends – using a system’s approach
  • Observe Science IDEAS classrooms and participate in professional development
  • Professional development – for all new Science IDEAS Principals
  • Professional development – collaborate with District Curriculum Specialists and Area Superintendents for Curriculum and Accountability
Multi-Phase Implementation of Science IDEAS Model

Classroom Implementation Expectations

• **Students**
  • Motivated and engaged in learning tasks
  • Clear evidence of high quality work by all students
  • Display of high level of relevant background knowledge which is applied to new learning tasks
  • Enjoy reading as much as they enjoy “doing” science
  • Levels the playing field for ‘all’ students – addresses equity

• **Teachers**
  • Confidence in implementing the Science IDEAS Model
  • Increased expectations about what all students can achieve
  • Active engagement in curricular planning – at/across grade levels
  • Encourage more in-depth classroom discussions
  • Recognize model’s potential to support reading comprehension
Multi-Phase Implementation of Science IDEAS Model

Implications for Modified Accountability Practices

• **Raising Achievement Expectations through Assessment**
  – Changing the structure of grade 3-8 reading comprehension accountability assessment
    • Grades 3-8: Focus on meaningful content-area understanding vs. “general” reading skills
    • Grades K-2: Use nationally-normed reading tests
  – Interpret performance in grades 3-8 to projected levels of success in HS content-area courses (via achievement trajectories)
  – Emphasize NRT achievement of students in K-2 and in HS content-area courses as the focus of accountability

• **Disaggregate student performance to measure school effectiveness**
  – Students continuously enrolled K-5 or K-8
  – Students enrolled for only complete school years
  – Remaining students enrolled only for portion of school year
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GROUP DISCUSSION
Q & A
NEXT STEPS FOR A DISTRICT