FAU NSF/IERI Project
Validation of a multi-phase scale up design for a knowledge-based intervention
in science and reading comprehension

OVERVIEW OF PROJECT
IMPLEMENTATION FIDELITY FORMS

Michael R. Vitale, *East Carolina University*
Nancy R. Romance, *Florida Atlantic University*

Judgments of implementation fidelity by teachers is an important component of the project. These data classify teachers into one of three categories: (a) not implementing or partially implementing the Science IDEAS model, (b) implementing Science IDEAS with fidelity, and (c) implementing Science IDEAS in an outstanding fashion. Additionally, obtaining fidelity information provides project staff with patterns of strengths and weaknesses that guide teacher professional development and support while also providing the means for helping to develop the capacity of school principals to assume management responsibility for the project in their schools.

Three complementary sources of fidelity data gathered in the project are: (1) a *Teacher Reflection Fidelity Form*, (2) a *Principal Implementation Fidelity Form*, and (3) a *Project Staff Clinical Fidelity Form*. The use of these is described below.

The primary use of the *Teacher Reflection Fidelity Form* in the project is to document teacher perspectives regarding fidelity of the Science IDEAS implementation by grade levels across schools and to provide diagnostic information to guide future professional development. In a related sense, the *Teacher Form* also provides school principals with important contextual information they need to insure that teachers have the school-level support they need to implement Science IDEAS. Teacher reflections also provide principals with additional background information as they form their own clinical judgments of teacher implementation fidelity and complete the *Principal Implementation Fidelity Form*. For the purposes of the project, Science IDEAS teachers are asked to complete this form at three points during the school year, following a schedule that precedes principal fidelity judgments. Specific dates are established collaboratively with school principals.

Project staff visiting schools to monitor fidelity also complete a "shortened" version of the *Teacher Form* for all project teachers at all schools using a *Project Staff Clinical Fidelity Form* which is similar to that used by principals. The timing of fidelity visits by project staff are synchronized with the completion of principal fidelity judgments. The resulting data collected by project staff are reported back to schools only in an aggregate fashion (e.g., by school overall or by grades across school) and never by teacher. In obtaining fidelity data, the project staff visits teacher classrooms, inspects teacher 2-week multi-day lesson plans, and makes observations as appropriate. Completion of the *Staff Form* is then made as a clinical judgment, based on the fidelity visit in conjunction with (or qualified by) any other informal staff observations made during the time-interval for which fidelity is to be rated.

All of the multiple forms of fidelity data collected through the project are used to summarize implementation trends across grades/schools and to relate fidelity of implementation to student achievement. When there are differences between principal and staff judgments, these are reconciled in a collaborative fashion. Teacher confidentiality is maintained on all reports involving data summaries and analyses. Upon request, teachers are able to review and discuss completed forms with project staff.

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SCIENCE IDEAS- TEACHER REFLECTION FIDELITY FORM

Guidelines for Teachers

The purpose of this form is to obtain information from teachers regarding their reflective observations associated with their use of the Science IDEAS model in their classrooms. In this context, fidelity refers to teacher perceptions of their use of the Science IDEAS model.

The primary use of this form is for the project to document the fidelity of Science IDEAS implementation by grade levels across schools and to provide diagnostic information to guide future professional development. In a similar sense, the form provides school principals with the important contextual information they need to insure teachers have the school-level support they need to implement Science IDEAS. For the purposes of the project, Science IDEAS teachers are asked to complete this form at several points during the school year (specific school-level timelines will be established by principals).

Project staff visiting schools also will complete related "short" versions of this form on all project teachers at all grade levels. Such project-collected data will be reported only very generally (e.g., by school overall or by grades across school) and never by teacher. In most cases, completion of a related form by project staff will require a brief orientation by teachers to identify the curricular focus of multi-day Science IDEAS instructional units they are using.

All of the multiple forms of fidelity data collected through the project will be used to summarize implementation trends across grades/schools and to relate fidelity of implementation to student achievement. Teacher confidentiality will be maintained on all reports involving data summaries and analyses. Upon request, teachers are welcome to review and discuss completed forms with project staff at any time.

Sections of Form

School Contact Information. This section provides general demographic information.

Science IDEAS Teacher-Reflection Profile. This section asks teachers to rate their own fidelity in implementing different elements of the Science IDEAS model using the following 3-choice scale:

C = Consistent use with fidelity
I = Inconsistent use (*but* with fidelity when used)
E = Enhancement needed for fidelity

Research Notes. This section asks teacher to highlight up to three strengths associated with fidelity of implementation and (if any) one possible area for which they need additional assistance/support.

Reflective Notes. This section solicits teachers' own reflective perceptions regarding their experiences in teaching Science IDEAS.

Definition of Specialized Term

Multi-Day Instruction. Refers to the planning and implementation of classroom instruction across a number of days that incorporate different forms of Science IDEAS activities, all of which focus on the same set of science concepts.

NSF/IERI SCIENCE IDEAS TEACHER-REFLECTION FIDELITY FORM

School Contact Information

School: _____   Teacher: _____   Grade: **3 4 5**   Date: ____/____/____

Science IDEAS Teacher- Reflection Profile

Note- Completing most fidelity items requires using multi-day lesson plans as an instructional context to determine the scope of Science IDEAS instruction and other related classroom operations. The exceptions that only reflect classroom status (vs. curricular contexts) are underlined.

Fidelity	*Implementation Element*
	1.0 *Classroom Scheduling for Science IDEAS*
C - - I - - E	**1.1** Science IDEAS is *scheduled* for 2 hours each day
C - - I - - E	**1.2** The number of student "pull outs" during Science IDEAS is minimal and does not interfere with implementing Science IDEAS instructional plan
N = _____	**1.3** Number of "pull outs" per week during the time Science IDEAS is scheduled
Hr___ Min___	**1.4** Number of Hrs./Min. Science IDEAS is *taught* in a typical day
	2.0 *Classroom Displays Reflect Commitment to Science IDEAS Instruction*
C - - I - - E	**2.1** Teacher-constructed classroom displays (e.g., concept maps, bulletin boards, science vocabulary words) emphasize past, present, and/or future science content taught
C - - I - - E	**2.2** Different forms of student work are displayed (e.g., journals, concept maps, written materials, results of Internet searches, book reports, projects) that emphasize science content taught
	3.0 *Curriculum Planning Follows the Science IDEAS Architecture*
C - - I - - E	**3.1** Curriculum planning follows a multi-day lesson approach to instruction
C - - I - - E	**3.2** The science concepts to be taught are the focus of the multi-day instructional lesson planning.
C - - I - - E	**3.3** The classroom instructional plan explicitly emphasizes involving students in "*learning more about what they are learning*"
	4.0 *Classroom Instruction Follows the Science IDEAS Architecture*
C - - I - - E	**4.1** Multi-day instructional lessons include a variety of all of the following activities (reading comprehension, demonstrations, hands-on activities, writing, journaling, concept mapping), all of which focus on the curricular concepts being taught (Note- Internet searches and projects are also encouraged)
C - - I - - E	**4.2** At least 25% of Science IDEAS instructional time involves student reading comprehension focusing on science concepts using multiple sources of reading materials
C - - I - - E	**4.3** Students are involved in teacher-guided use of the Science IDEAS reading comprehension routine at least once each week.
C - - I - - E	**4.4** Students are involved in concept mapping for reading comprehension *and* for writing as part of teacher-directed, small-group, or individual student activities
C - - I - - E	**4.5** Student journals reflect the curricular concepts taught across multi-day curriculum units
C - - I - - E	**4.6** Classroom assessment reflects student levels of success on the variety of Science IDEAS activities and student in-depth understanding of core science concepts emphasized in instruction
	5.0 *The Science IDEAS Classroom is Well-Managed and Affectively Positive*
C - - I - - E	**5.1** The physical arrangement of the classroom facilitates maintaining student attention and monitoring student activities
C - - I - - E	**5.2** Instructional resources/materials are organized so that they are readily accessible
C - - I - - E	**5.3** Students are attentive to and involved in instructional activities
C - - I - - E	**5.4** Affective nature of the classroom is positive, supportive, and encouraging of student behavior and accomplishments
	6.0 *School Resources and Support are Sufficient for Implementing Science IDEAS*
C - - I - - E	**6.1** Classroom reading materials (including supplemental content reading materials), science activity materials, and Internet access are adequate
C - - I - - E	**6.2** Teachers engage in collaborative grade level instructional planning and preparation for curriculum units
C - - I - - E	**6.3** Teachers have adequate in-school time, end-of-day time (after students leave), or professional release days for individual (or collaborative) Science IDEAS planning and preparation
C - - I - - E	**6.4** Teachers have access to specialized assistance in implementation of the Science IDEAS model from in-school supervisors, other teachers, or out-of-school project staff

- - - - - - - - - - **Please See Page 2 for Reflective Notes** - - - - - - - - - - -

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NSF/IERI SCIENCE IDEAS TEACHER-REFLECTION FIDELITY FORM

Reflective Notes

Science IDEAS Fidelity Strengths (List up to three items relating to teaching Science IDEAS that you do well)

    Strength 1:

    Strength 2:

    Strength 3:

Priority Fidelity Enhancement (If any- list the most important item relating to teaching Science IDEAS for which you would like to additional assistance/ support.)

    Most important Science IDEAS element on which you need additional assistance/support:

    Suggestion(s) regarding the type(s) of assistance/support that you would find most useful:

Other Science IDEAS Reflective Notes (Optional- Please note your own experiences relating to your teaching Science IDEAS, and/or your observations of other Science IDEAS teachers experiences (no names please), and/or your observations of Science IDEAS students):

NSF/IERI SCIENCE IDEAS- PRINCIPAL IMPLEMENTATION FIDELITY FORM

Rater Code or Name: _____   **Date:**____/____/____

School _____ **Teacher** _____**Grade** ___

Rater Category: ___ **Principal**   ___ **Other:** _____

Instructions: In completing this form, please remember that all entries should represent your best judgment regarding classroom scheduling and implementation from the date of the last fidelity rating through the date of this form.

Science IDEAS Implementation Scheduling

Hrs.:____ Min: ____ [a] **Time Scheduled:** Hrs./Minutes Per Day <u>scheduled</u> for Science IDEAS *Note- Code as hr. and minutes e.g., 2 hr., 1 hr. 30 minutes, etc (2 hrs. per day should be coded as 2 hr., no implementation should be coded as 0)*

N. Pull-Outs: _____ [b] **Pull-Outs:** Number of students <u>per week</u> "pulled-out" during the time Science IDEAS is <u>scheduled</u>. *Note- if a student is "pulled-out" of Science IDEAS more than once per week, count as the total the number of times student is "pulled out"*

Hrs.:____ Min: ____ [c] **Time Science IDEAS is Taught:** Hrs./Minutes Per Day Science IDEAS is <u>typically</u> taught *Note- Code as hr. and minutes e.g., 2 hrs., 1 hr. 30 minutes, etc (2 hrs. per day should be coded as 2 hrs., no implementation should be coded as 0)*

Science IDEAS Classroom Implementation *(Circle the choice that represents your best judgment)*

Y   N   [d] **Leadership Group:** Teacher is member of IERI Leadership Group (Y = Yes, N = No) *Note- Yes indicates that the teachers is actively involved with the IERI Leadership Cadre*

2   1   0   [e] **Science IDEAS Displays:** Classroom Displays indicate Science IDEAS presence (2 = Strong; 1 = Little; 0 = None) *Note- If you walked into an empty classroom, to what extent would involvement in IDEAS be indicated...*

2   1   0   [f] **Science IDEAS Multi-Day Lesson Planning:** Most recent 4-weeks of multi-day lesson plans are consistent with Science IDEAS architecture (2 = multi-day lessons are concept focused, include all 6 Science IDEAS elements, and allocate 25% or more time to multiple-source reading; 1 = multi-day lessons are concept focused, include all 6 Science IDEAS elements; 0 = multi-day lessons are not concept focused and/or do not include all 6 Science IDEAS elements)

3   2   1   0   [g] **Science IDEAS Teaching Fidelity:** <u>Global Judgment</u> of Science IDEAS Teaching Fidelity (3 = Strong Fidelity; 2 = Acceptable Fidelity; 1 = Improvement Needed; 0 = No Implementation) *Note- This is a global clinical judgment that corresponds with the more detailed IERI Fidelity of Implementation Form. This judgment should be based on informally occurring classroom "drop-ins" during the time regularly scheduled for Science IDEAS. Assigning 3 2 1 0 should be done as \follows:*

    IF Science IDEAS has not been taught in any way, THEN 0
    IF Science IDEAS is being taught THEN 1 OR 2 OR 3:
        1 = science teaching/potential learning is non-conceptual or rote OR none of the 6 Science IDEAS elements is being used (e.g., reading comprehension routine, concept mapping, student hands-on, teacher demonstration, journaling, writing about science)
        2 = science teaching/learning is conceptually meaningful AND one of the 6 IDEAS elements is being used
        3 = the two requirements for (2) above are met AND Science IDEAS teaching is modeled in an outstanding fashion

4   3   2   1   [h] **Classroom Affect:** Classroom affect involving interactions with students (4 = Consistently Positive, 3 = More Positive than Negative, 2 = More Negative than Positive, 1 = Consistently Negative) *Note- Focus should be on the quality of interaction with students and how they influence that affective feeling of the classroom.*

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PROJECT STAFF CLINICAL FIDELITY FORM

Guidelines for Use

Instructions: The following are general procedural guidelines for using the Project Staff Clinical Judgment Form.

1. Context/preparation for completing the fidelity checklist
   a. Remember, all entries should represent your best judgment regarding implementation scheduling and classroom implementation from the date of the last fidelity rating through the date this checklist is completed. If you have no prior knowledge of Science IDEAS teaching in a specific classroom, then complete the checklist based upon what you are able to observe or to infer from what you observe. In all cases, your judgments should be based in the criteria for each item.
   b. You should have prior knowledge of the science content that is being taught and learned so that you can anticipate relevance of what is to be taught during your classroom visit.

2. Classroom Observation/Visit Process
   a. Enter the classroom as unobtrusively as possible. Move to the back of the classroom or out of the line of sight between the teacher and students. Do not maintain eye contact with students or interact with students in any way.
   b. Count the number of students in the classroom and write that number in the checklist.
   c. Do NOT write on the checklist or otherwise make notes while you are in the classroom (except as noted below in (b) and 3(a))
   d. Observe for a period of 5-8 minutes (MAX)
      i. the classroom displays
      ii. what the students are doing to determine whether their learning activity is conceptually meaningful or "rote"
      iii. whether the class is involved in one of the 6 Science IDEAS elements
      iv. whether the teacher is outstanding in modeling Science IDEAS instruction
   e. Do note:
      i. the approximate number of students on task
      ii. the general classroom affect

3. Classroom Exit Process
   a. Have the teacher meet with you briefly before you leave re: the following (MAX = 3 minutes):
      i. time Science IDEAS is scheduled each day; N. pullouts per week; time Science IDEAS is taught each day
      ii. very brief contextual overview of prior IDEAS instruction on what was being taught
      iii. where to find the most recent 4 weeks of multi-day lesson plans for that classroom (that you will briefly inspect before leaving)
   b. Thank the teacher (if the teacher asks, indicate your willingness to share your checklist information at a later date)

4. Competition of Checklist (After exiting classroom)
   a. After you exit the classroom, complete the remainder of the fidelity checklist
   b. Add whatever notes you feel appropriate at this time, if any

NSF/IERI SCIENCE IDEAS- PROJECT STAFF CLINICAL FIDELITY FORM

Rater Code or Name: _____   **Date:**____/____/____

School _____ **Teacher** _____**Grade** ___

Rater Category: ___ **IERI Staff** ___ **Other:** _____

Instructions: In completing this checklist, please remember that all entries should represent your best judgment regarding classroom scheduling and implementation from the date of the last fidelity rating through the date this checklist is completed.

Science IDEAS Implementation Scheduling

Hrs.:____ Min: ____ [a] **Time Scheduled:** Hrs./Minutes Per Day <u>scheduled</u> for Science IDEAS *Note- Code as hr. and minutes e.g., 2 hr., 1 hr. 30 minutes, etc (2 hrs. per day should be coded as 2 hrs, etc.*

N. Pull-Outs: _____ [b] **Pull-Outs:** Number of students <u>per week</u> "pulled-out" during the time Science IDEAS is <u>scheduled</u>. *Note 1- if a student is "pulled-out" of Science IDEAS more than once per week, count as the total the number of times student is "pulled out" Note 2- A student that has been pulled out prior to Science IDEAS but then enters after instruction has begun should be counted as a pull-out.*

Hrs.:____ Min: ____ [c] **Time Science IDEAS is Taught:** Hrs./Minutes Per Day Science IDEAS is <u>typically taught</u> *Note- Code as hr. and minutes e.g., 2 hrs., 1 hr. 30 minutes, etc (2 hrs. per day should be coded as 2 hrs, no implementation should be coded as 0)*

Science IDEAS Classroom Implementation *(Circle the choice that represents your best judgment)*

Y N [d] **Leadership Group:** Teacher is member of an IERI Leadership Group (Y = Yes, N = No) *Note- Yes indicates that the teacher is actively involved with IERI Leadership Cadre*

2 1 0 [e] **Science IDEAS Displays:** Classroom Displays indicate Science IDEAS presence (2 = Both teacher AND student displays; 1 = teacher OR student displays; 0 = If no displays or not enough display presence to indicate Science IDEAS as a major element of classroom instruction if you were to walk into the classroom when it was empty)

2 1 0 [f] **Science IDEAS Multi-Day Lesson Planning:** Most recent 4-weeks of multi-lesson plans are consistent with Science IDEAS architecture (2 = multi-day lessons are concept focused, include all 6 Science IDEAS elements, and allocate 25% or more time to multiple-source reading; 1 = multi-day lessons are concept focused, include all 6 Science IDEAS elements; 0 = multi-day lessons are not concept focused and/or do not include all 6 Science IDEAS elements)

3 2 1 0 [g] **Science IDEAS Teaching Fidelity:** <u>Global Judgment</u> of Science IDEAS Teaching Fidelity (3 = Strong Fidelity, 2 = Acceptable Fidelity, 1 = Improvement Needed, 0 = No Implementation) *Note- This is a global clinical judgment that reflects the more detailed IERI Fidelity of Implementation Form. This judgment should be based on cumulative prior knowledge regarding teacher proficiency in Science IDEAS AND what is observed during the Science IDEAS fidelity visit (with prior teacher notification of visit). Assigning 3 2 1 0 should be done as follows:*
   IF not teaching science in any way, THEN 0 (until the visit can be rescheduled)
   IF Science IDEAS is being taught THEN 1 OR 2 OR 3:
      1 = science teaching/potential learning is non-conceptual or rote OR none of the 6 Science IDEAS elements is being used (e.g., reading comprehension routine, concept mapping, student hands-on, teacher demonstration, journaling, writing about science)
      2 = science teaching/learning is conceptually meaningful AND one of the 6 IDEAS elements is being used
      3 = the two requirements for (2) above are met AND Science IDEAS teaching is modeled in an outstanding fashion

_____ [h] **Percent of students "on-task:"** i.e., "engaged in science learning task(s)":

Total students: _____   N on-task: _____   [Pct. = N on-task / Total students]

4 3 2 1 [i] **Classroom Affect:** Classroom affect involving interactions with students (4 = Consistently Positive; 3 = More Positive than Negative; 2 = More Negative than Positive; 1 = Consistently Negative) *Note- Focus should be on the affective quality of teacher interaction with students and how they influence the affective feeling of the classroom.*