2020-2023 Blended Learning Grant Program-Planning Grants

Letter of Interest (LOI) Application Due 11: 59 p.m. CT, September 18, 2020

Texas Education Agency

NOGA ID	
Authorizing legislation	**GAA, Article IX, Rider 41, 86th Texas Legislature; TEC 29.924; TEC 28.020**

This LOI application may be submitted via email to **loiapplications@tea.texas.gov**

The LOI application may be signed with a digital ID, or it may be signed by hand. Both forms of signature are acceptable.

TEA mus receive the application by **11:59 p.m. CT, September 18, 2020**.

Application stamp-in date and time

Grant period from	**October 23, 2020 to May 31, 2023**
Pre-award costs permitted from	**the date of award announcement**

Required Attachments

1. Excel workbook with the grant's budget schedules (linked along with this form on the TEA Grants Opportunities page)
2. All attachments as listed on page 4-5 of the Program Guidelines

Amendment Number

Amendment number (For amendments only; enter N/A when completing this form to apply for grant funds): N/A

Applicant Information

Organization: Ector County ISD | CDN: 068901 | Campus: Reagan Elem. | ESC: 18 | DUNS: N/A

Address: 802 N. Sam Houston | City: Odessa | ZIP: 79761 | Vendor ID: 75-60013620

Primary Contact: Dr. Scott Muri | Email: scott.muri@ectorcountyisd.org | Phone: 432-456-9879

Secondary Contact: Andrea Messick | Email: andrea.messick@ectorcountyisd.org | Phone: 432-456-0069

Certification and Incorporation

I understand that this application constitutes an offer and, if accepted by TEA or renegotiated to acceptance, will form a binding agreement. I hereby certify that the information contained in this application is, to the best of my knowledge, correct and that the organization named above has authorized me as its representative to obligate this organization in a legally binding contractual agreement. I certify that any ensuing program and activity will be conducted in accordance and compliance with all applicable federal and state laws and regulations.

I further certify my acceptance of the requirements conveyed in the following portions of the LOI application, as applicable, and that these documents are incorporated by reference as part of the LOI application and Notice of Grant Award (NOGA):

- ☒ LOI application, guidelines, and instructions
- ☒ Debarment and Suspension Certification
- ☒ General and application-specific Provisions and Assurances
- ☒ Lobbying Certification

Authorized Official Name: Dr. Scott Muri | Title: Superintendent of Schools

Email: scott.muri@ectorcountyisd.org | Phone: 432-456-9879

Signature: [signature] | Date: 09/17/2020

Shared Services Arrangements

☒ Shared services arrangements (SSAs) are not permitted for this grant.

Statutory/Program Assurances

The following assurances apply to this program. In order to meet the requirements of the program, the applicant must comply with these assurances.

Check each of the following boxes to indicate your compliance.

☒ The applicant provides assurance that program funds will supplement (increase the level of service), and not supplant (replace) state mandates, State Board of Education rules, and activities previously conducted with state or local funds. The applicant provides assurance that state or local funds may not be decreased or diverted for other purposes merely because of the availability of these funds. The applicant provides assurance that program services and activities to be funded from this LOI will be supplementary to existing services and activities and will not be used for any services or activities required by state law, State Board of Education rules, or local policy.

☒ The applicant provides assurance that the application does not contain any information that would be protected by the Family Educational Rights and Privacy Act (FERPA) from general release to the public.

☒ The applicant provides assurance to adhere to all the Statutory and TEA Program requirements as noted in the 2020-2023 Blended Learning Grant Program-Planning Grants Program Guidelines.

☒ The applicant provides assurance to adhere to all the Performance Measures, as noted in the 2020-2023 Blended Learning Grant Program-Planning Grants Program Guidelines, and shall provide to TEA, upon request, any performance data necessary to assess the success of the program.

☒ The applicant will attend the mandatory BLGP Kickoff Summit. The 2020 BLGP Kickoff Summit will take place virtually on November 12-13, 2020. Attendance at the BLGP Summit is mandatory for all participating districts. The district BLGP Project Manager must be in attendance.

☒ The applicant will designate and provide a district-level project manager who will be available to dedicate at least 50% of his or her time to designing and implementing the BLGP plan.

☒ The applicant will list the proposed feeder pattern to be included in the district with a rationale as to why each school is included as part of this grant.

☒ The applicant will contract with a BLGP Design and Implementation vendor in the fall/winter of the Planning year.

☒ The applicant will implement a TEA approved software program in all grade levels selected to participate in the BLGP. Non-math blended learning pilot participants must gain TEA approval for their chosen software program. Different grades participating in the program within a given school (or district) may choose to implement different software programs.

☒ The applicant will submit the BLGP Strategic Plan in the spring prior to implementation. The Strategic Design component of the BLGP Strategic Plan is tentatively due to TEA in Jan/Feb of 2021. The remainder of the plan is tentatively due in May of 2021. Exact dates will be sent to grantees by email.

Statutory/Program Assurances (Cont.)

☒ The applicant will complete all BLGP Fidelity of Execution Requirements in program implementation, which include:

a. Weekly Student Software Progress: Achieve the vendor-specific weekly student software progress metrics of the selected software program

b. Weekly Teacher Software Usage: One teacher log-in per week is required

c. Weekly Data Driven Instruction (DDI) time: Execute DDI time, provide evidence of DDI time (TEA will provide a template), that will be delivered to TEA

d. Monthly Meaningful Learning Experiences (MLE): Execute MLE(s), provide evidence of MLE (TEA will provide a template), that will be delivered to TEA

e. Beginning, Middle, and End of Year Interim Assessment: Administer approved interim assessment and send campus growth report to TEA

Statutory/Program Requirements

1. **District Commitment:** Explain why your school district wants to join the Blended Learning Grant Program (BLGP) as a Math Innovation Zone (MIZ) or a non-math blended learning pilot. *(Recommended Length: 1.5-2 pages)*

a. Describe why the district hopes to become a MIZ site or a non-math pilot and how the BLGP planning and execution process will benefit the district and schools. Include how blended learning is connected to the district's long-term vision and near-term priorities, and demonstrate that the district has the capacity to dedicate time and energy to this work at the present time. If applicable, response may include why COVID has changed the district prioritization of blended learning.

b. Describe what problem or set of problems the district and schools are attempting to solve through the use of a blended learning instructional model.

c. At its core, blended learning represents innovation in how instruction is delivered. However, we know that through the BLGP's robust planning and execution processes, blended learning can also foster **broader operational benefits** at the district and school levels - these may include changes in staffing, scheduling, finance, etc. Please describe your district's willingness to explore and embrace these kinds of broader operational innovation.

The mission of Ector County ISD is to inspire and challenge every student to be prepared for success and to be adaptable in an ever-changing society. Our students are the future for the region and for Texas, and Ector County ISD is committed to serving every individual student by building agency and developing personalized learning paths to strengthen student knowledge and performance. To meet this goal, ECISD understands that planning for success is crucial for improving student and teacher engagement in the learning process. Providing support and professional learning to teachers is of utmost importance. However, ECISD also recognizes that the district's students have historically underperformed in science, especially as they reach middle school and continue through high school.

After a year-long strategizing and consultation period, Ector County ISD decided that effective, carefully planned blended learning has the potential to both fill in gaps for students and teach necessary grade level standards to eventually bring students up to mastery. ECISD defines blended learning not as merely putting adaptive on-line content in front of students, but as an integrated classroom where teacher-led content is supported by small-group collaborative learning, individualized practice, and project-based real-world applicative learning. This definition of blended learning is supported by technology through adaptive assessments, automated grading, and real-time, actionable data that allows teachers to intervene immediately.

In ECISD's Strategic Plan, the Board has identified a specific goal to increase the percentage of students achieving or exceeding the meets standard on state assessments from 32% to 60% by May 2024 across all tested content areas.

Statutory/Program Requirements

1. Continued: Please use the additional space provided to respond to Program Requirement Question #1.

The district recognizes that giving students opportunities for collaborative learning, individualized practice, and project-based real- world applicative learning can increase student achievement and engagement; therefore, the Innovation Department created the PICK Education program in order to increase student agency by introducing hands-on, problem based learning. PICK Education ignites curiosity and discovery by connecting students and teachers with real-world experiences through research collaborations with community partnerships such as universities, institutes, businesses, and school districts. Through the PICK Education model, ECISD opened an entire new world of learning and redefined the classroom setting while staying true to TEKS-aligned coursework. ECISD intends to utilize the PICK Education resources in the non-math blended learning setting with a focus on science and technology in order to complement the primary curriculum.

Students who participate in PICK Education are immersed in authentic scientific data collection in a Blended setting. Students have access to multiple technology tools such as, but not limited to, digital microscopes, stereo microscopes, iPads, and Chromebooks. These tools will be used in whole-group, small-group, and individual learning environments. The students' scientific findings are curated in science research collections so that if students find something scientifically significant, they receive credit for their work such as acknowledgements in publications and publication authorship.

As an action item to board goals 1, 2, and 3 in the ECISD Strategic Plan, the district has committed to increasing student daily attendance from 93.5% to 95% by 2024. The Innovation department has collected data that show exciting increases in student attendance associated with the inclusion of inquiry-based, hands-on learning experiences in the classroom. For example, participating elementary campuses experienced a 2-6% increase in attendance during the weeks/ months the inquiry-based hands-on investigations were occurring in classrooms. This data shows evidence of student engagement and excitement around asking questions, collecting meaningful data, using critical thinking skills, and discovering and communicating the answers to real scientific questions.

PICK Education artifact link: https://bit.ly/32GJWLb

ECISD will assume the cost to continue professional learning in the second and third years of the grant. Professional learning and coaching will be provided by outside staff developers that are experts in blended learning and implementation. The remaining grant funds will be utilized to purchase classroom supplies for the blended learning classroom redesign. ECISD will continue to fund the classroom redesigns as the blended learning model is expanded in subsequent years.

Statutory/Program Requirements

1. Continued: Please use the additional space provided to respond to Program Requirement Question #1.

2. **Project Manager:** Who will lead this work at your district by serving as the **BLGP Project Manager** and why is this person the right person for this role? *(Recommended Length: 0.5 page)*

   a. Include information about the **experience, background, and ability to drive student results** of the BLGP PM.

   b. Please describe the prospective PM's commitment to and vision for the BLGP in the district. Why is this individual committed to implementing a high-quality blended learning model?

   c. Describe how the district will enable the PM to make decisions across functions (C&I, IT, etc.) and influence district leadership to drive instructional and operational change.

Because of Ector County ISD's commitment to blended learning, the district created the position and hired a Blended Learning Coordinator in order to fulfill state Blended Learning grant requirements and district blended learning initiatives. The Blended Learning Coordinator's past experience as a campus administrator has shaped her to serve as the program manager for all blended learning initiatives that include, but are not limited to, state grant supported opportunities, district strategic planning, staff professional development, and on-line curriculum.

The Blended Learning Coordinator is responsible for developing school capacity in concert with the overall academic design of the blended programs that embrace an environment in which student thinking is actively promoted, valued, and made visible. The Blended Learning Coordinator is also responsible for helping teachers create a positive blended learning culture district-wide that encourages teachers to discuss how to support students to develop skills in collaboration, communication, independence, problem solving, and reasoning, all while keeping data-driven instruction in mind.

Statutory/Program Requirements

2. Continued: Please use the additional space provided to respond to Program Requirement Question #2.

The Blended Learning Coordinator is responsible for overseeing the implementation of awarded grants and their guidelines. As the coordinator, she also ensures that high quality instruction is being delivered and that teachers are implementing blended learning with fidelity. In addition, she oversees blended learning operations at the district and campus level and ensures all teachers in those programs strive to continuously improve their practices in support of student growth. She also functions as the primary liaison between teachers, campus leaders, and the district leadership team.

3. How does the district **use data to drive decision making** about student achievement? *(Recommended Length: 0.5 page)*

   a. Describe the **quantitative goals, metrics, and measures** that the district or charter school network tracks. Describe the progress towards these goals and the evidence the district collects to assess this progress. These indicators can include multi-annual, annual, and during-the-school-year goals. If available, include examples of data from the past few years to demonstrate how the district or open-enrollment charter school is tracking results.

Ector County ISD uses a combination of grade-level proficiency data combined with student-growth assessments to properly measure the growth of students each step of the way. ECISD uses a needs assessment and the district improvement plan (DIP) goals to drive district instructional initiatives. The DIP goals set the target measures for each content area. Campuses engage in the same process utilizing their site-specific plans that are aligned to the district goals. Ector County ISD also provides short-cycle assessments. Teachers are expected to utilize these assessments before each unit to backward-design the lessons for their class. This process enables teachers to take the assessments, break down the standards within each assessment, and create Know/ Show charts so teachers have a comprehensive understanding of the unit. Throughout the unit of instruction, the campus Professional Learning Communities (PLCs) engage in lesson plan development to create the rotation stations.

All students are given a beginning of year diagnostic assessment (NWEA Measures of Academic Progress) to determine a baseline and a learning pathway. Students will then take the NWEA MAP test in the middle and at the end of the year to measure growth each semester.

Statutory/Program Requirements (Cont.)

3. Continued: Please use the additional space provided to respond to Program Requirement Question #3.

4. **NON-MATH BLENDED LEARNING PILOT APPLICANTS ONLY:** What on-line curriculum program is intended to be used in the district and schools? *(Recommended Length: 0.5 page)*

   a. Describe why this program best meets the needs of students and teachers in the proposed BLGP site(s) and how a high-fidelity use of this program will lead to gains in student achievement.

The primary Science curriculum used in ECISD is Savvas EasyBridge (formerly Pearson K12 Learning). This program empowers our teachers to spark interest and increase achievement in every student by providing rich and engaging content along with embedded assessments that provide instant feedback to gauge student progress. This program provides interactive flipped videos, quick labs, interactive graphic organizers, and read-to-text options. These program features provide students a pathway to the skills they need to achieve mastery on their grade-specific TEKS.

In addition to Savvas, our third through fifth grade students will participate in PICK Education initiatives and use the online laboratory simulation program called Mystery Science. These two hands-on and inquiry-based science experiences will be used to fulfill the recommended minimum of 60% (for third grade) and 50% (for fourth and fifth grades) laboratory time recommended by TEA. Every Mystery Science lesson begins with a mystery that is meant to hook the students and is followed by a series of thought-provoking questions. The Mystery Science platform will allow students the ability to self-pace their learning and gain the knowledge and skills necessary to achieve mastery. This platform also allows students with various levels of knowledge and skills to catch up to their peers. Teachers can track student activity allowing for intervention and support when students are not engaging with course materials. With virtual labs, science education can take place anywhere, anytime. Students are provided with a flexible learning tool that can be used at their own pace and in their own time.

CDN 068901 Vendor ID 75-60013620 Amendment # N/A

Appendix I: Amendment Description and Purpose (leave this section blank when completing the initial application for funding)

An amendment must be submitted when the program plan or budget is altered for the reasons described in the "When to Amend the Application" document posted on the Administering a Grant page. The following are required to be submitted for an amendment: (1) Page 1 of the application with updated contact information and current authorized official's signature and date, (2) Appendix I with changes identified and described, (3) all updated sections of the application or budget affected by the changes identified below, and, if applicable, (4) Amended Budget Request. Amendment Instructions with more details can be found on the last tab of the budget template.

You may duplicate this page

Amended Section	Reason for Amendment

Application Part 2:

2020-2023 Blended Learning Grant Program-Planning Grants

Authorized by: GAA, Article IX, Rider 41, 86th Texas Legislature; TEC 29.924; TEC 28.020

IMPORTANT NOTICE: Application Part 2 is not compatible with Google Docs.

Complete the supporting budget worksheets first, i.e., 6100, 6200, 6300.... The Program Budget Summary worksheet is linked to and will auto-populate with the amounts you entered on the respective supporting budget worksheets. All budgeted amounts must be entered in whole dollar amounts. ***Do not enter any cents.***

On each supporting budget worksheet, complete the Total Program Costs and Total Direct Admin Costs lines. Together these lines must equal the Grand Total otherwise the field will change color to red indicating an error. These amounts will automatically populate on the Program Budget Summary worksheet.

If pre-award costs are allowable, budget all pre-award costs in the Pre-Award Cost column on the appropriate supporting budget worksheet(s).

Payroll 6100

Complete this worksheet to request payroll costs. Do not request funds for consultants or contractors on this worksheet; those funds should be requested on the Professional and Contracted Services 6200 worksheet.

Professional and Contracted Services 6200

Complete this worksheet to request professional services, consulting services, and contracted services.

Supplies and Materials 6300

Complete this worksheet to request supplies and materials.

Other Operating Costs 6400

Complete this worksheet to request other operating costs. Be sure to comply with documentation requirements, where applicable.

Capital Outlay 6600

Complete this worksheet to request capital outlay costs.

Capital outlay means funds budgeted or expended to purchase capital assets, such as equipment, or expenditures for the acquisition cost of capital assets. Capital assets are tangible or intangible assets having a useful life of more than one year, which are valued at $5,000 or greater per unit, or the applicant's capitalization level, whichever is less. Capital outlay may include expenditures to make improvements to capital assets that materially increase their value or useful life.

Program Budget Summary

This worksheet auto-populates from the supporting budget worksheets for Program Costs, Direct Admin Costs, and Pre-award Costs, if applicable. There are only a few fields that may require input from the grantee, if applicable, such as indicating *Consolidate Administrative Funds, Indirect Costs, Shared Services Arrangement,* or the *Administrative Cost Calculation.*

Consolidate Administrative Funds - If applicable, click on the cell, then click on the arrow that appears. Select "Yes, No or N/A" from the drop down selection.

Indirect Costs - Refer to the Maximum Indirect Cost Handbook to calculate the maximum indirect costs that may be claimed for the grant and enter the amount of indirect costs budgeted for this grant on line 7 under the Total Budgeted Cost column.
Maximum Indirect Cost Workbook link.

Shared Services Arrangement - If applicable, enter amount of payments to member districts on line 9.

Direct Administrative Cost Calculation - Enter the Total of All Budgeted Costs from line 8 on line 10 to determine the maximum amount allowable for direct administrative costs.

For further guidance, refer to the Budgeting Costs Guidance Handbook.

Application Part 2: **2020-2023 Blended Learning Grant Program-Planning Grants**

Authorized by: GAA, Article IX, Rider 41, 86th Texas Legislature; TEC 29.924; TEC 28.020

County District Number or Vendor ID:		068901		Amendment # (for amendments only):	
Payroll Costs (6100)					
	Employee Position Title	**Estimated # of Positions 100% Grant Funded**	**Estimated # of Positions Less than 100% Grant Funded**	**Grant Amount Budgeted**	**Pre-Award**
Academic/Instructional					
1	Teacher			$ -	$ -
2	Educational Aide			$ -	$ -
3	Tutor	0		$ -	$ -
Program Management and Administration					
4	Project Director			$ -	$ -
5	Project Coordinator			$ -	$ -
6	Teacher Facilitator			$ -	$ -
7	Teacher Supervisor			$ -	$ -
8	Secretary/Admin Assistant			$ -	$ -
9	Data Entry Clerk			$ -	$ -
10	Grant Accountant/Bookkeeper			$ -	$ -
11	Evaluator/Evaluation Specialist			$ -	$ -
Auxiliary					
12	Counselor			$ -	$ -
13	Social Worker			$ -	$ -
14	Community Liaison/Parent Coordinator			$ -	$ -
Education Service Center (to be completed by ESC only when ESC is the applicant)					
15	ESC Specialist/Consultant			$ -	$ -
16	ESC Coordinator/Manager/Supervisor			$ -	$ -
17	ESC Support Staff			$ -	$ -
18	ESC Other: (Enter position title here)			$ -	$ -
19	ESC Other: (Enter position title here)			$ -	$ -
20	ESC Other: (Enter position title here)			$ -	$ -
Other Employee Positions					
21	(Enter position title here)			$ -	$ -
22	(Enter position title here)			$ -	$ -
23			**Subtotal Employee Costs:**	**$ -**	**$ -**
Substitute, Extra-Duty Pay, Benefits Costs					
24	6112 - Substitute Pay			$ -	$ -
25	6119 - Professional Staff Extra-Duty Pay			$ -	$ -
26	6121 - Support Staff Extra-Duty Pay			$ -	$ -
27	6140 - Employee Benefits			$ -	$ -
28	61XX - Tuition Remission (IHEs only)			$ -	$ -
29			**Subtotal Substitute, Extra-Duty Pay, Benefits Costs:**	**$ -**	**$ -**
30			**Grand Total:**	**$ -**	**$ -**
31			**Total Program Costs*:**	$ -	
32			**Total Direct Admin Costs*:**	$ -	

***Complete the Total Program Costs (line 31) and Total Direct Admin Costs (line 32) lines. The sum of these lines must equal the Grand Total (line 30) otherwise the field will change color to red indicating an error. These amounts will automatically populate on the Program Budget Summary worksheet.**

For budgeting assistance, see the Allowable Cost and Budgeting Guidance section of the Grants Administration Division Administering a Grant page.

FOR TEA USE ONLY	
Changes on this page have been confirmed with:	On this date:
Via telephone/fax/email (circle as appropriate):	By TEA staff person:

County District Number or Vendor ID:	068901	Amendment #:	0

Professional and Contracted Services (6200)

NOTE: Specifying an individual vendor in a grant application does not meet the applicable requirements for sole-source providers. TEA's approval of such grant applications does not constitute approval of a sole-source provider. Please provide a brief description for the service and purpose.

	Description of Service and Purpose	Grant Amount Budgeted	Pre-Award
1	6269 - Rental or lease of buildings, space in buildings, or land Specify purpose:		$ -
2	Service: Professional Learning Specify purpose: Consulting Services for Blended Learning Grant Program	$ 75,000	$ -
3	Service: Specify purpose:	$ -	$ -
4	Service: Specify purpose:	$ -	$ -
5	Service: Specify purpose:	$ -	$ -
6	Service: Specify purpose:	$ -	$ -
7	Service: Specify purpose:	$ -	$ -
8	Service: Specify purpose:	$ -	$ -
9	**Subtotal of professional and contracted services requiring specific approval:**	**$ 75,000**	**$ -**
10	Remaining 6200 - Professional and contracted services that do not require specific approval.	$ -	$ -
11	**Grant Total:**	**$ 75,000**	**$ -**
12	**Total Program Costs*:**	$ 75,000	
13	**Total Direct Admin Costs*:**	$ -	

***Complete the Total Program Costs (line 12) and Total Direct Admin Costs (line 13) lines. The sum of these lines must equal the Grand Total (line 11) otherwise the field will change color to red indicating an error. These amounts will automatically populate on the Program Budget Summary worksheet.**

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Application Part 2: **2020-2023 Blended Learning Grant Program-Planning Grants**

Authorized by: GAA, Article IX, Rider 41, 86th Texas Legislature; TEC 29.924; TEC 28.020

County District Number or Vendor ID: 068901		Amendment #: 0	
Supplies and Materials (6300)			
	Expense Item Description	**Grant Amount Budgeted**	**Pre-Award**
1	Remaining 6300 - Supplies and materials that do not require specific approval:	$ 50,000	$ -
2	**Grand Total:**	**$ 50,000**	**$ -**
3	**Total Program Costs*:**	$ 50,000	
4	**Total Direct Admin Costs*:**	$ -	

***Complete the Total Program Costs (line 3) and Total Direct Admin Costs (line 4) lines. The sum of these lines must equal the Grand Total (line 2) otherwise the field will change color to red indicating an error. These amounts will automatically populate on the Program Budget Summary worksheet.**

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Application Part 2: **2020-2023 Blended Learning Grant Program-Planning Grants**

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County District Number or Vendor ID: 068901		Amendment #: 0	
Other Operating Costs (6400)			
	Expense Item Description	**Grant Amount Budgeted**	**Pre-Award**
1	6411 - Out-of-state travel for employees. Must be allowable per Program Guidelines and grantee must keep documentation locally.	$ -	$ -
2	6412 - Travel for students to conferences (does not include field trips). Requires pre-authorization in writing. Specify name and purpose of conference:	$ -	$ -
3	~~6412/6494 - Educational Field Trip(s). Must be allowable per Program Guidelines and grantee must keep documentation locally.~~	~~$ -~~	~~$ -~~
4	6413 - Stipends for non-employees other than those included in 6419.	$ -	$ -
5	6419 - Non-employee costs for conferences. Requires pre-authorization in writing.	$ -	$ -
6	6411/6419 - Travel costs for officials such as Executive Director, Superintendent, or Local Board Members. Allowable only when such costs are directly related to the grant. Must be allowable per Program Guidelines and grantee must keep out-of-state travel documentation locally.	$ -	$ -
7	~~6495 - Cost of membership in civic or community organizations.~~ ~~Specify name and purpose of organization:~~	~~$ -~~	~~$ -~~
8	64XX - Hosting conferences for non-employees. Must be allowable per Program Guidelines, and grantee must keep documentation locally.	$ -	$ -
9	**Subtotal of other operating costs (6400) requiring specific approval:**	**$ -**	**$ -**
10	Remaining 6400 - Other operating costs that do not require specific approval.	$ -	$ -
11	**Grand Total:**	**$ -**	**$ -**
12	**Total Program Costs*:**	$ -	
13	**Total Direct Admin Costs*:**	$ -	

***Complete the Total Program Costs (line 12) and Total Direct Admin Costs (line 13) lines. The sum of these lines must equal the Grand Total (line 11) otherwise the field will change color to red indicating an error. These amounts will automatically populate on the Program Budget Summary worksheet.**

In-state travel for employees does not require specific approval.

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County District Number or vendor ID:	068901	Amendment #	0
Grant Period:	**October 23, 2020 to May 31, 2023 Pre-award costs are permitted, if requested, from date of annoucement to October 23**	**Fund Code:**	**429**

Budget Summary

	Description and Purpose	**Class/ Object Code**	**Program Cost**	**Direct Administrative Cost**	**Total Budgeted Cost**	**Pre-Award Cost**
1	Payroll Costs	6100	$ -	$ -	$ -	$ -
2	Professional and Contracted Services	6200	$ 75,000	$ -	$ 75,000	$ -
3	Supplies and Materials	6300	$ 50,000	$ -	$ 50,000	$ -
4	Other Operating Costs	6400	$ -	$ -	$ -	$ -
6	**Total Direct Costs:**		**$ 125,000**	**$ -**	**$ 125,000**	**$ -**
7	* Indirect Costs:				**$ -**	**$ -**
8	**Total of All Budgeted Costs :**		**$ 125,000**	**$ -**	**$ 125,000**	**$ -**

Direct Administrative Cost Calculation

10	Total of All Budgeted Costs from line 8:	**$ 125,000**
11	**Direct Administration** Cap per Program Guidelines (X%)	0.05
12	Maximum amount allowable for **direct administrative** costs:	**$ 6,250**

For current year indirect cost rates, please visit the Federal Fiscal Compliance and Reporting **Indirect Cost Rates page.*

Indirect costs are not required to be budgeted in the grant application in order to be charged to the grant. Indirect costs are calculated and reimbursed based on actual expenditures when reported in the expenditure reporting system, regardless of the amount budgeted and approved in the grant application. Indirect costs claimed are part of the total grant award amount, not in addition to the grant award amount. Do not submit an amendment solely for the purpose of budgeting indirect costs.

*To calculate the maximum indirect cost, please use the **Maximum Indirect Costs Worksheet** on the Grants Administration Division's Administering a Grant page.*

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County District Number or vendor ID:	Amendment #	

SUBMITTING AN AMENDMENT

This worksheet is used to amend the budget of a grant application that has been approved by TEA and issued a Notice of Grant Award (NOGA). Refer to the amendment instructions (orange tab) located on this Excel workbook for information about when to submit an amendment and the documents required.

AMENDED BUDGET REQUEST

	Description	Class/ Object Code	A. Grand Total from Previously Approved Budget	B. Amount Deleted	C. Amount Added	D. New Grand Total
1	Payroll Costs	6100				$ -
2	Professional and Contracted Services	6200				$ -
3	Supplies and Materials	6300				$ -
4	Other Operating Costs	6400				$ -
6	**Total Direct Costs:**		**$ -**	**$ -**	**$ -**	$ -
7	**Indirect Costs:**					$ -
8	**Total Costs:**		**$ -**	**$ -**	**$ -**	**$ -**

FOR TEA USE ONLY	
Changes on this page have been confirmed with:	On this date:
Via telephone/fax/email (circle as appropriate)	By TEA staff person:

Instructions: Request for Amendment

After the original application is approved and the grantee has received the Notice of Grant Award (NOGA), the grantee may need to make changes to the budget or the planned program. Most grantees are permitted to make some changes to the budget or program without notifying or getting approval from TEA. (Some grantees are required to notify and get approval from TEA for all changes to their budget or programs.) In other cases, however, the grantee is required to submit formal notice to TEA of the desire or intent to change the budget or program.

Refer to the Amendment Submission Guidance section of the Administering a Grant page of the TEA website. The guidance titled “When to Amend the Application” provides details on which grantees are and are not required to submit amendments and when amendments are required. Also refer to the General and Fiscal Guidelines, Amending the Application, for more detailed information about amendments.

Regardless of how a grantee amends the application to distribute funds among the class/object codes, the grantee is still responsible for carrying out the scope and objectives of the grant as described in the approved application.

TEA reserves the right to reject unnecessary amendments without reviewing and approving them.

Submitting an Amendment

An amendment must be submitted when the program plan or budget is altered for the reasons described in the “When to Amend the Application” guidance posted in the Amendment Submission Guidance section of the Administering a Grant page of the TEA website.

How to Submit an Amendment

An amendment may only be submitted by email to loiapplications@tea.texas.gov.

Pages to Include with an Amendment

*Required for **all** amendment requests*

1. Page one of the application with an updated signature and date
2. Appendix I of the applciation: Negotiation and Amendments

Required for budget amendment requests

3. Request for Amendment excel page
4. Program Budget Summary
5. Supporting budget pages

Assembling the Amendment

Follow these steps to complete all schedules required to be submitted:

1. Complete page 1
   a. Complete the box in the upper right corner of the schedule by indicating the number of the amendment. The first amendment you submit for the grant is #1; if that amendment is approved, the next amendment becomes

   b. Ensure all applicant information is current and correct.

   c. Ensure the authorized official information is current and correct. The authorized official must sign and date with the date that the amendment is being submitted.

2. Complete Appendix 1: Negotiation and Amendments

   a. Choose the section you wish to amend from the drop down menu

   b. Describe the changes you are making and the reason for the changes. Always work with the most recent negotiated or amended application. If you are requesting a revised budget, please include the budget attachments

3. If you are requesting a budget change, complete the Request for Amendment budget page

   a. In column A, enter the grand total for each class/object code in the most recently approved application or amendment.

   b. In column B, enter the amount being deleted from each class/object code.

   c. In column C, enter the amount being added to each class/object code.

   d. Column D and the total direct cost line will automatically calculate your changes

4. If you are requesting a budget change, complete the Program Budget Summary page and the corresponsding supporting budget page. For each class/object code on the budget summary, strike through the previously approved amount and enter

5. Do not resubmit any attachments required in the original application.

5. Do not resubmit any attachments required in the original application.

NON-MATH BLENDED PILOT APPLICANTS ONLY
District or Charter School Network Information Form
District Overview
Attachment 1B

The Blended Learning Grant Program takes a feeder pattern approach from pilot to scale. Please input your proposed feeder pattern below.

Instructions:

1) Input the school name for the proposed schools
2) Indicate the proposed launch grade for year one with an "x" in approriate grade level
3) If needed, provide a rationale for the intended grades for year one of BLGP
4) An example is provide immediately below for context

Please reach out to MIZ@tea.texas.gov with any questions about this document

SAMPLE Feeder Pattern			Grade To Be Launched in Year One														
Ref.	School Type	SAMPLE School Name	PK	K	1	2	3	4	5	6	7	8	9	10	11	12	SAMPLE Notes
NA	Middle School	Lone Star Middle School								x							Plan to start w/ earliest grade at MS and build up
NA	Elementary School	Red Elementary School		x			x										
NA	Elementary School	Blue Elementary School	x				x										Piloting program in Pre K at Blue ES

Feeder Pattern 1			Grade To Be Launched in Year One														
Ref.	School Type	School Name	PK	K	1	2	3	4	5	6	7	8	9	10	11	12	Rationale (if needed)
1A																	
1B																	
1C																	
1D																	
1E																	
1F																	

Feeder Pattern 2 (if applicable)			Grade To Be Launched in Year One														
Ref.	School Type	School Name	PK	K	1	2	3	4	5	6	7	8	9	10	11	12	Rationale (if needed)
2A																	
2B																	
2C																	
2D																	
2E																	
2F																	

Feeder Pattern 3 (if applicable)			Grade To Be Launched in Year One														
Ref.	School Type	School Name	PK	K	1	2	3	4	5	6	7	8	9	10	11	12	Rationale (if needed)
3A																	
3B																	
3C																	
3D																	
3E																	
3F																	

NON-MATH BLENDED PILOT APPLICANTS ONLY
District or Charter School Network Information Form
Feeder Pattern 1 Form
Attachment 1B
Letter of Interest for 2021-2022 BLGP Planning and Execution Grants

Instructions
- Please submit the requested district or charter school information including information regarding the proposed campuses for the non-math blended learning pilot
- Input information relevant to the topic in column into **column B** (light blue cell) and follow the instructions in the cell; Only one feeder pattern should be included per tab. Duplicate tabs for additional feeder patterns as needed.
- Incomplete subsections or incorrect information are cause for rejection from this request for Letter of Interest
- In the case of more than 4 intended feeder elementary schools, please submit the below information as an appendix to the Letter of Interest
- Please reach out to MIZ@tea.texas.gov with any questions about this document

Application	Applicant Response
Please confirm that this application is for a non-math blended learning pilot (not Math Innovation Zones)	Non-Math Blended Learning Pilot
District or Open Enrollment Charter School Information	**Applicant Response**
District or Charter School Name	Ector County ISD
District or Charter School Network ID Number	75-60013620
Personnel	
Superintendent Name	Dr. Scott Muri
LOI Author Name	Jason Osborne
LOI Author Title	Chief Innovation Officer
LOI Author Phone	432-456-9507
LOI Author E-mail Address	jason.osborne@ectorcountyisd.org
District BLGP Project Manager Name	Andrea Messick
District BLGP Project Manager Title	Blended Learning Coordinator
District BLGP Project Manager Email Address	andrea.messick@ectorcountyisd.org
District BLGP Project Manager Phone Number	432-456-0069
District Details	
District Overall Performance - Numeric Grade Only	75
Total Students in District	32,971
Total Students Anticipated to Participate in Proposed BLGP Grade Levels in 2021-2022 School Year	263
District Classification (Rural, Urban, Suburban)	Suburban
Education Service Center Region	18
Name of school in district with most previous experience in blended learning	Wilson & Young Middle School
Number of years the school (in previous answer) has used blended learning	1
Interim assessment district is planning to be used for BLGP grade levels, if known (NWEA MAP, Renaissance Star, STAAR Interims, etc…)	NWEA MAP
Current **Student Information System (SIS)** in use throughout district (TxEIS, PowerSchool, Skyward, iTCCS, District-made system, etc…)	iTCCS
List all **other TEA programs** in which the district is currently involved (i.e. Lone Star Governance, System of Great Schools, Additional Days School Year, School Action Fund, etc…)	Lone Star Governance
Are your proposed BLGP campuses implementing calendars in line with TEA's Additional Days School Year (ADSY) program? If so, what is your anticipated ADSY model (e.g. Summer Learning, Intersessional Calendar, or Full Year Redesign)? If not, answer "No".	No
Is your district using or planning to use any curricular content provided through Texas Home Learning 3.0?	No
If your district is using or planning to use any curricular content provided through Texas Home Learning 3.0, for which grade levels and curricular content areas? Please list all. If not, leave blank.	Enter Text Response (Grade level: content areas)
If awarded this grant in Fall 2020, when does the district expect to be able to contract with technical assistance providers, given district **procurement policies**?	1/1/2021
Does the applicant and relevant district and school stakeholders commit to attending the **BLGP Kickoff Summit** virtually on November 12-13, 2020?	Yes
Blended Learning Grant Program Specific Questions	**Applicant Response**
Proposed Software Program and Fidelity Metrics	
What is the subject/content area for which the district is applying to be a part of this non-math blended learning pilot?	Science
Which online curriculum program is the district and schools applying to use?	Savvas
Given your knowledge of the online curriculum program, what metric do you expect the district and TEA to track on a weekly basis to evaluate student progress and program success? *Note: All non-math online curriculum programs must receive TEA approval of weekly student progress metrics	Student scores on formative assessments encompassing questions from TEKS Resource System item bank.
Is the proposed online curriculum a supplemental or core curriculum? **Core curriculum:** a full course design for a given content area that covers all of the grade level standards and skills and is the primary curriculum used for teaching and learning. **Supplemental curriculum:** designed to enhance and align with the core curriculum used for instruction by targeting a specific set of content, skills, and/or goals, but does not replace the core curriculum.	Core
Please link a research study confirming a positive impact from this online curriculum program on student achievement results.	https://www.savvas.com/index.cfm?locator=PSZvBo

Feeder Pattern 1	No Response needed in this cell.
School 1A Details	Applicant Response
School 1A Campus Name	Reagan Magnet Elementary School
School 1A Campus Total Students	621
Lowest Grade at School 1A Campus (i.e. "6" for 6th grade)	PK
Highest Grade at School 1A Campus (i.e. "8" for 8th grade)	5
Personnel	
School 1A Campus Principal Name	Jennifer Bizzell
School 1A Campus Principal Email Address	jennifer.bizzell@ectorcountyisd.org
School 1A Campus Principal Phone Number	432-456-1189
School 1A Campus BLGP Project Manager	Benjie Rosaldo
School 1A Campus BLGP Project Manager Title	5th Grade Science Teacher
School 1A Campus BLGP Project Manager Email Address	benjie.rosaldo@ectorcountyisd.org
School 1A Campus BLGP Project Manager Phone Number	432-456-1189
School Details	
Performance Results and Economic Indicators	
School 1A Campus Overall Performance - Numeric Grade Only	97
Percent of Students at School 1A Campus Eligible for Free or Reduced Price Lunch	28%
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	100%
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	99%
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, All Subjects)**	100%
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, All Subjects)**	99%
Percent of Students at **Meets Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	100%
Percent of Students at **Meets Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	89%
Feeder Pattern	
Approximate Percentage of Current Students at Middle (or Upper) School Matriculating **from Elementary School A**	4%
Approximate Percentage of Current Students at Middle (or Upper) School Matriculating **from Elementary School B**	Enter Percent
Approximate Percentage of Current Students at Middle (or Upper) School Matriculating **from Elementary School C**	Enter Percent
Approximate Percentage of Current Students at Middle (or Upper) School Matriculating **from Elementary School D**	Enter Percent
Approximate Percentage of Current Students at Middle (or Upper) School Matriculating **from Elementary School E**	Enter Percent

School 1B Details (if applicable)	Applicant Response
School 1B Campus Name	Enter Text Response
School 1B Total Students	Enter Numeric Response
Lowest Grade at School 1B (i.e. "PK" for Pre-K)	Choose Numeric Response
Highest Grade at School 1B (i.e. "5" for 5th grade)	Choose Numeric Response
Personnel	
School 1B Principal Name	Enter Text Response
School 1B Principal Email Address	Enter Email Address
School 1B Principal Phone Number	Enter Phone Number
School 1B BLGP Project Manager	Enter Text Response
School 1B BLGP Project Manager Title	Enter Text Response
School 1B BLGP Project Manager Email Address	Enter Email Address
School 1B BLGP Project Manager Phone Number	Enter Phone Number
School Details	
Performance Results and Economic Indicators	
School 1B Overall Performance - Numeric Grade Only	Enter Response
Percent of Students at School 1B Eligible for Free or Reduced Price Lunch	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, All Subjects**)	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, All Subjects**)	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent

School 1C Details (if applicable)	Applicant Response
School 1C Campus Name	Enter Text Response
School 1C Total Students	Enter Numeric Response
Lowest Grade at School 1C (i.e. "PK" for Pre-K)	Choose Numeric Response
Highest Grade at School 1C (i.e. "5" for 5th grade)	Choose Numeric Response
Personnel	
School 1C Principal Name	Enter Text Response
School 1C Principal Email Address	Enter Email Address
School 1C Principal Phone Number	Enter Phone Number
School 1C BLGP Project Manager	Enter Text Response
School 1C BLGP Project Manager Title	Enter Text Response
School 1C BLGP Project Manager Email Address	Enter Email Address
School 1C BLGP Project Manager Phone Number	Enter Phone Number
School Details	
Performance Results and Economic Indicators	
School 1C Overall Performance - Numeric Grade Only	Enter Response
Percent of Students at School 1C Eligible for Free or Reduced Price Lunch	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, All Subjects**)	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, All Subjects**)	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent

School 1D Details (if applicable)	Applicant Response
School 1D Campus Name	Enter Text Response
School 1D Total Students	Enter Numeric Response
Lowest Grade at School 1D (i.e. "PK" for Pre-K)	Choose Numeric Response
Highest Grade at School 1D (i.e. "5" for 5th grade)	Choose Numeric Response
Personnel	
School 1D Principal Name	Enter Text Response
School 1D Principal Email Address	Enter Email Address
School 1D Principal Phone Number	Enter Phone Number
School 1D BLGP Project Manager	Enter Text Response
School 1D BLGP Project Manager Title	Enter Text Response
School 1D BLGP Project Manager Email Address	Enter Email Address
School 1D BLGP Project Manager Phone Number	Enter Phone Number
School Details	
Performance Results and Economic Indicators	
School 1D Overall Performance - Numeric Grade Only	Enter Response
Percent of Students at School 1D Eligible for Free or Reduced Price Lunch	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, All Subjects**)	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, All Subjects**)	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent

School 1E Details (if applicable)	Applicant Response
School 1E Campus Name	Enter Text Response
School 1E Total Students	Enter Numeric Response
Lowest Grade at School 1E (i.e. "PK" for Pre-K)	Choose Numeric Response
Highest Grade at School 1E (i.e. "5" for 5th grade)	Choose Numeric Response
Personnel	
School 1E Principal Name	Enter Text Response
School 1E Principal Email Address	Enter Email Address
School 1E Principal Phone Number	Enter Phone Number
School 1E BLGP Project Manager	Enter Text Response
School 1E BLGP Project Manager Title	Enter Text Response
School 1E BLGP Project Manager Email Address	Enter Email Address
School 1E BLGP Project Manager Phone Number	Enter Phone Number
School Details	
Performance Results and Economic Indicators	
School 1E Overall Performance - Numeric Grade Only	Enter Response
Percent of Students at School 1E Eligible for Free or Reduced Price Lunch	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, All Subjects**)	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, All Subjects**)	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent

School 1F Details (if applicable)	Applicant Response
School 1F Campus Name	Enter Text Response
School 1F Total Students	Enter Numeric Response
Lowest Grade at School 1F (i.e. "PK" for Pre-K)	Choose Numeric Response
Highest Grade at School 1F (i.e. "5" for 5th grade)	Choose Numeric Response
Personnel	
School 1F Principal Name	Enter Text Response
School 1F Principal Email Address	Enter Email Address
School 1F Principal Phone Number	Enter Phone Number
School 1F BLGP Project Manager	Enter Text Response
School 1F BLGP Project Manager Title	Enter Text Response
School 1F BLGP Project Manager Email Address	Enter Email Address
School 1F BLGP Project Manager Phone Number	Enter Phone Number
School Details	
Performance Results and Economic Indicators	
School 1F Overall Performance - Numeric Grade Only	Enter Response
Percent of Students at School 1F Eligible for Free or Reduced Price Lunch	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, All Subjects**)	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, All Subjects**)	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent

If necessary, provide additional context including former campus names for accountability purposes or alternative feeder pattern approaches.

NON-MATH BLENDED PILOT APPLICANTS ONLY
District or Charter School Network Information Form
Feeder Pattern 2 Form
Attachment 1B

Letter of Interest for 2021-2022 BLGP Planning and Execution Grants

Instructions
- Please submit the requested district or charter school information including information regarding the proposed campuses for the non-math blended learning pilot
- Input information relevant to the topic in column into **column B** (light blue cell) and follow the instructions in the cell; Only one feeder pattern should be included per tab. Duplicate tabs for additional feeder patterns as needed.
- Incomplete subsections or incorrect information are cause for rejection from this request for Letter of Interest
- In the case of more than 4 intended feeder elementary schools, please submit the below information as an appendix to the Letter of Interest
- Please reach out to MIZ@tea.texas.gov with any questions about this document

Application	Applicant Response
Please confirm that this application is for a non-math blended learning pilot (not Math Innovation Zones)	Choose One
District or Open Enrollment Charter School Information	Applicant Response
District or Charter School Name	Enter Text Response
District or Charter School Network ID Number	Enter Numeric Response
Personnel	
Superintendent Name	Enter Text Response
LOI Author Name	Enter Text Response
LOI Author Title	Enter Text Response
LOI Author Phone	Enter Phone Number
LOI Author E-mail Address	Enter Email Address
District BLGP Project Manager Name	Enter Text Response
District BLGP Project Manager Title	Enter Text Response
District BLGP Project Manager Email Address	Enter Phone Number
District BLGP Project Manager Phone Number	Enter Email Address
District Details	
District Overall Performance - Numeric Grade Only	Enter Numeric Response
Total Students in District	Enter Numeric Response
Total Students Anticipated to Participate in Proposed BLGP Grade Levels in 2021-2022 School Year	Enter Numeric Response
District Classification (Rural, Urban, Suburban)	Enter Text Response
Education Service Center Region	Enter Numeric Response
Name of school in district with most previous experience in blended learning	Enter Text Response
Number of years the school (in previous answer) has used blended learning	Enter Numeric Response
Interim assessment district is planning to be used for BLGP grade levels, if known (NWEA MAP, Renaissance Star, STAAR Interims, etc...)	Enter Text Response

Current **Student Information System (SIS)** in use throughout district (TxEIS, PowerSchool, Skyward, iTCCS, District-made system, etc…)	Enter Text Response
List all **other TEA programs** in which the district is currently involved (i.e. Lone Star Governance, System of Great Schools, Additional Days School Year, School Action Fund, etc…)	Enter Text Response
Are your proposed BLGP campuses implementing calendars in line with TEA's Additional Days School Year (ADSY) program? If so, what is your anticipated ADSY model (e.g. Summer Learning, Intersessional Calendar, or Full Year Redesign)? If not, answer "No".	Enter Text Response
Is your district using or planning to use any curricular content provided through Texas Home Learning 3.0?	Choose "Yes" or "No"
If your district is using or planning to use any curricular content provided through Texas Home Learning 3.0, for which grade levels and curricular content areas? Please list all. If not, leave blank.	Enter Text Response (Grade level: content areas)
If awarded this grant in Fall 2020, when does the district expect to be able to contract with technical assistance providers, given district **procurement policies**?	Enter Date (mm/dd/yy)
Does the applicant and relevant district and school stakeholders commit to attending the **BLGP Kickoff Summit** virtually on November 12-13, 2020?	Choose "Yes" or "No"
Blended Learning Grant Program Specific Questions	Applicant Response
Proposed Software Program and Fidelity Metrics	
What is the subject/content area for which the district is applying to be a part of this non-math blended learning pilot?	Enter Text Response
Which online curriculum program is the district and schools applying to use?	Enter Text Response
Given your knowledge of the online curriculum program, what metric do you expect the district and TEA to track on a weekly basis to evaluate student progress and program success? *Note: All non-math online curriculum programs must receive TEA approval of weekly student progress metrics	Enter Text Response
Is the proposed online curriculum a supplemental or core curriculum?	Choose Response
Please link a research study confirming a positive impact from this online curriculum program on student achievement results.	Insert Link
Feeder Pattern 1	**No Response needed in this cell.**
School 2A Details	Applicant Response
School 2A Campus Name	Enter Text Response
School 2A Campus Total Students	Enter Numeric Response
Lowest Grade at School 2A Campus (i.e. "6" for 6th grade)	Choose Numeric Response
Highest Grade at School 2A Campus (i.e. "8" for 8th grade)	Choose Numeric Response
Personnel	
School 2A Campus Principal Name	Enter Text Response
School 2A Campus Principal Email Address	Enter Email Address
School 2A Campus Principal Phone Number	Enter Phone Number
School 2A Campus BLGP Project Manager	Enter Text Response
School 2A Campus BLGP Project Manager Title	Enter Text Response
School 2A Campus BLGP Project Manager Email Address	Enter Email Address
School 2A Campus BLGP Project Manager Phone Number	Enter Phone Number
School Details	
Performance Results and Economic Indicators	
School 2A Campus Overall Performance - Numeric Grade Only	Enter Numeric Response
Percent of Students at School 2A Campus Eligible for Free or Reduced Price Lunch	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, All Subjects)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, All Subjects)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Feeder Pattern	
Approximate Percentage of Current Students at Middle (or Upper) School Matriculating **from Elementary School A**	Enter Percent
Approximate Percentage of Current Students at Middle (or Upper) School Matriculating **from Elementary School B**	Enter Percent
Approximate Percentage of Current Students at Middle (or Upper) School Matriculating **from Elementary School C**	Enter Percent
Approximate Percentage of Current Students at Middle (or Upper) School Matriculating from **Elementary School D**	Enter Percent
Approximate Percentage of Current Students at Middle (or Upper) School Matriculating **from Elementary School E**	Enter Percent
School 2B Details (if applicable)	Applicant Response
School 2B Campus Name	Enter Text Response
School 2B Total Students	Enter Numeric Response
Lowest Grade at School 2B (i.e. "PK" for Pre-K)	Choose Numeric Response
Highest Grade at School 2B (i.e. "5" for 5th grade)	Choose Numeric Response
Personnel	

School 2B Principal Name	Enter Text Response
School 2B Principal Email Address	Enter Email Address
School 2B Principal Phone Number	Enter Phone Number
School 2B BLGP Project Manager	Enter Text Response
School 2B BLGP Project Manager Title	Enter Text Response
School 2B BLGP Project Manager Email Address	Enter Email Address
School 2B BLGP Project Manager Phone Number	Enter Phone Number
School Details	
Performance Results and Economic Indicators	
School 2B Overall Performance - Numeric Grade Only	Enter Response
Percent of Students at School 2B Eligible for Free or Reduced Price Lunch	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, All Subjects)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, All Subjects)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
School 2C Details (if applicable)	Applicant Response
School 2C Campus Name	Enter Text Response
School 2C Campus ID Number	Enter Numeric Response
School 2C Campus Address	Enter Address
School 2C Total Students	Enter Numeric Response
Lowest Grade at School 2C (i.e. "PK" for Pre-K)	Choose Numeric Response
Highest Grade at School 2C (i.e. "5" for 5th grade)	Choose Numeric Response
Personnel	
School 2C Principal Name	Enter Text Response
School 2C Principal Email Address	Enter Email Address
School 2C Principal Phone Number	Enter Phone Number
School 2C BLGP Project Manager	Enter Text Response
School 2C BLGP Project Manager Title	Enter Text Response
School 2C BLGP Project Manager Email Address	Enter Email Address
School 2C BLGP Project Manager Phone Number	Enter Phone Number
School Details	
Performance Results and Economic Indicators	
School 2C Overall Performance - Numeric Grade Only	Enter Response
Percent of Students at School 2C Eligible for Free or Reduced Price Lunch	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, All Subjects)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, All Subjects)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
School 2D Details (if applicable)	Applicant Response
School 2D Campus Name	Enter Text Response
School 2D Total Students	Enter Numeric Response
Lowest Grade at School 2D (i.e. "PK" for Pre-K)	Choose Numeric Response
Highest Grade at School 2D (i.e. "5" for 5th grade)	Choose Numeric Response
Personnel	
School 2D Principal Name	Enter Text Response
School 2D Principal Email Address	Enter Email Address
School 2D Principal Phone Number	Enter Phone Number
School 2D BLGP Project Manager	Enter Text Response
School 2D BLGP Project Manager Title	Enter Text Response
School 2D BLGP Project Manager Email Address	Enter Email Address
School 2D BLGP Project Manager Phone Number	Enter Phone Number
School Details	
Performance Results and Economic Indicators	
School 2D Overall Performance - Numeric Grade Only	Enter Response

Percent of Students at School 2D Eligible for Free or Reduced Price Lunch	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, All Subjects)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, All Subjects)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
School 2E Details (if applicable)	Applicant Response
School 2E Campus Name	Enter Text Response
School 2E Total Students	Enter Numeric Response
Lowest Grade at School 2E (i.e. "PK" for Pre-K)	Choose Numeric Response
Highest Grade at School 2E (i.e. "5" for 5th grade)	Choose Numeric Response
Personnel	
School 2E Principal Name	Enter Text Response
School 2E Principal Email Address	Enter Email Address
School 2E Principal Phone Number	Enter Phone Number
School 2E BLGP Project Manager	Enter Text Response
School 2E BLGP Project Manager Title	Enter Text Response
School 2E BLGP Project Manager Email Address	Enter Email Address
School 2E BLGP Project Manager Phone Number	Enter Phone Number
School Details	
Performance Results and Economic Indicators	
School 2E Overall Performance - Numeric Grade Only	Enter Response
Percent of Students at School 2E Eligible for Free or Reduced Price Lunch	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, All Subjects)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, All Subjects)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
School 2F Details (if applicable)	Applicant Response
School 2F Campus Name	Enter Text Response
School 2F Total Students	Enter Numeric Response
Lowest Grade at School 2F (i.e. "PK" for Pre-K)	Choose Numeric Response
Highest Grade at School 2F (i.e. "5" for 5th grade)	Choose Numeric Response
Personnel	
School 2F Principal Name	Enter Text Response
School 2F Principal Email Address	Enter Email Address
School 2F Principal Phone Number	Enter Phone Number
School 2F BLGP Project Manager	Enter Text Response
School 2F BLGP Project Manager Title	Enter Text Response
School 2F BLGP Project Manager Email Address	Enter Email Address
School 2F BLGP Project Manager Phone Number	Enter Phone Number
School Details	
Performance Results and Economic Indicators	
School 2F Overall Performance - Numeric Grade Only	Enter Response
Percent of Students at School 2F Eligible for Free or Reduced Price Lunch	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2019 STAAR (all grades tested, All Subjects)**	Enter Percent
Percent of Students at **Approaches Grade Level or Above on 2018 STAAR (all grades tested, All Subjects)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2019 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
Percent of Students at **Meets Grade Level or Above on 2018 STAAR (all grades tested, Proposed Subject in Cell B39 Only)**	Enter Percent
If necessary, provide additional context including former campus names for accountability purposes or alternative feeder pattern approaches.	

Scott R. Muri, Ed. D
Superintendent | Ector County Independent School District

Believing OUR Students are THE Future, the mission of Ector County ISD is to inspire and challenge every student to be prepared for success to be adaptable in an ever-changing society.

September 17, 2020

Texas Education Agency
Blended Learning Grant Program (BLGP)
William B. Travis State Office Building
Austin, TX

Dear Texas Education Agency:

Ector County Independent School District is pleased to have the opportunity to apply for the Non-Math Blended Learning Grant Program, specifically to implement blended learning in science classrooms in third through fifth grade. Our district is striving to provide quality learning experiences for all students in our district. Our goal is to strengthen the skills for our students as they prepare to take the STAAR science exam in fifth grade and to ensure they carry those skills with them after leaving their elementary campus. ECISD has implemented technology in K-5 grades that provides children the opportunity to engage in adaptive, TEKS-aligned, on-line content.

With over 62% of our students qualifying for free and reduced meals, we believe blended learning experiences will provide our students the opportunity to grow and close learning gaps in science. We look forward to the opportunity to engage students with rigorous, adaptive, TEKS-aligned online content, which will provide teachers with data to use during teacher led instruction through a station rotation/lab rotation model.

As superintendent of schools, I fully support this initiative. We have hired a Blended Learning Coordinator that is dedicated to the planning and execution of the Blended Learning Grant Program. Since we understand implementing blended learning requires considerable time and effort, this full-time employee will dedicate 50% of their time to strategic planning, implementation, staff professional development, and on-line curriculum support for teachers and students. As an advocate of blended learning, I have vast experience in bringing personalized learning into districts where I have served. Those districts include Fulton County Schools in Atlanta, GA and Spring Branch ISD in Houston, TX. I also developed and introduced virtual learning and blended learning as Chief Information Officer in Charlotte-Mecklenburg Schools in Charlotte, NC.

I hope that you will select Ector County ISD as a grantee for the Non-Math Blended Learning Grant Program. Help us bring blended learning opportunities to more students in Odessa.

Sincerely,

Scott Muri, Ed.D.
Superintendent of Schools
Ector County Independent School District

Reagan Magnet Elementary
Principal: Jennifer Bizzell

Phone: (432) 456-1189
Jennifer.Bizzell@ectorcountyisd.org

OUR students...THE future

September 17, 2020

Texas Education Agency
Blended Learning Grant Program (BLGP)
William B. Travis State Office Building
Austin, TX

Dear Texas Education Agency:

Reagan Magnet Elementary School in Odessa, Texas is eager to implement a Blended Learning program with our third through fifth grade science students. We would like to apply for the Non-Math Blended Learning Grant to help further our knowledge and help us bring Blended Learning to our campus. We know this will require out of the box thinking and a collaborative approach, and we are committed to better developing our staff to better serve our students. We also know that Blended Learning requires a collaborative approach because teachers will need to share instructional practices, expectations, and accountability to ensure student growth. I have witnessed our teachers express interest in professional learning to develop a positive Blended Learning culture.

Reagan Magnet Elementary School students are currently taking the MAP test, and they will test again in January and May. We will be able to document student progress in Science achievement. This assessment, along with weekly exit tickets and short cycle assessments, will provide teachers with the data needed to personalize learning within the science curriculum.

For the reasons stated above, I wholeheartedly support our district in moving forward with implementing Blended Learning.

Sincerely,

Jennifer Bizzell
Principal, Reagan Magnet Elementary School
Ector County ISD
Odessa, TX

Andrea J. Messick
Blended Learning Coordinator
432-385-4986

Education and Certifications

Master of Education in Educational Leadership

West Texas A&M University, Canyon, TX 2016

Bachelor of General Studies

West Texas A&M University, Canyon, TX 2009

Certifications

EC-12 Principal
EC-6 Generalist
4-8 Core Subjects
EC-12 English as a Second Language Supplemental
EC-12 Special Education Supplemental
EC-12 Health
EC-12 Physical Education
Google Level 1 and Level 2 Certified Educator
Apple Teacher Certification

Key Qualifications and Trainings

UTeach Foundations of Blended Learning

Blended Learning in Action Book Study

Shake Up Learning Book Study

Get Better Faster Coaching

ECISD Strategic Action Human Resources Team Co-Leader

TTESS and AEL Certified

LPAC and ARD Administrator (SEAS and Project ELL)

Conscious Discipline

Employment

- Blended Learning Coordinator, Ector County ISD
  July 2020- Present
- Assistant Principal, Ector County ISD
  July 2017- July 2020
- Certified Teacher, Amarillo ISD
  August 2016 to June 2017
- Certified Teacher, Dumas ISD
  August 2010 to June 2016

References

Lauren Tavarez, Ector County ISD Director of Instr. Technology, 432-559-4008
Jason Osborne, Ector County ISD Chief Innovation Officer, 202-345-1615
T.J. Funderburg, Dumas ISD Principal, 806-584-2037
Larry Appel, Dumas ISD Retired Superintendent, 806-922-4302

Ector County ISD Blended Learning
Andrea Messick, Blended Learning Coordinator
802 N. Sam Houston, Odessa, Texas 79761
(432) 456-0069
andrea.messick@ecisd.school

September 17, 2020

Texas Education Agency
Blended Learning Grant Program (BLGP)
William B. Travis State Office Building
Austin, TX

Dear Texas Education Agency:

As the Blended Learning Coordinator in Ector County ISD, I am excited for the opportunity to apply for the Non-Math Blended Learning Grant Program to help continue to bring Blended Learning to other schools in Odessa.

The administrators and teachers at Reagan Magnet Elementary Schools have shown interest in Blended Learning for a few months, and a couple have already completed a Blended Learning in Action (by Catlin Tucker) book study and/ or the 30-hour UTeach *Foundations of Blended Learning* course through the University of Texas. They are eager to continue to learn and implement Blended Learning in their classrooms.

I am committed to overseeing this process to ensure the grant duties are fulfilled, and I vow to devote at least half of my time to this grant, should it be awarded. With my previous experience as a campus administrator, I will be able to support and coach teachers and administrators alike as we plan to bring Blended Learning to third through fifth grade classrooms on the previously mentioned campus.

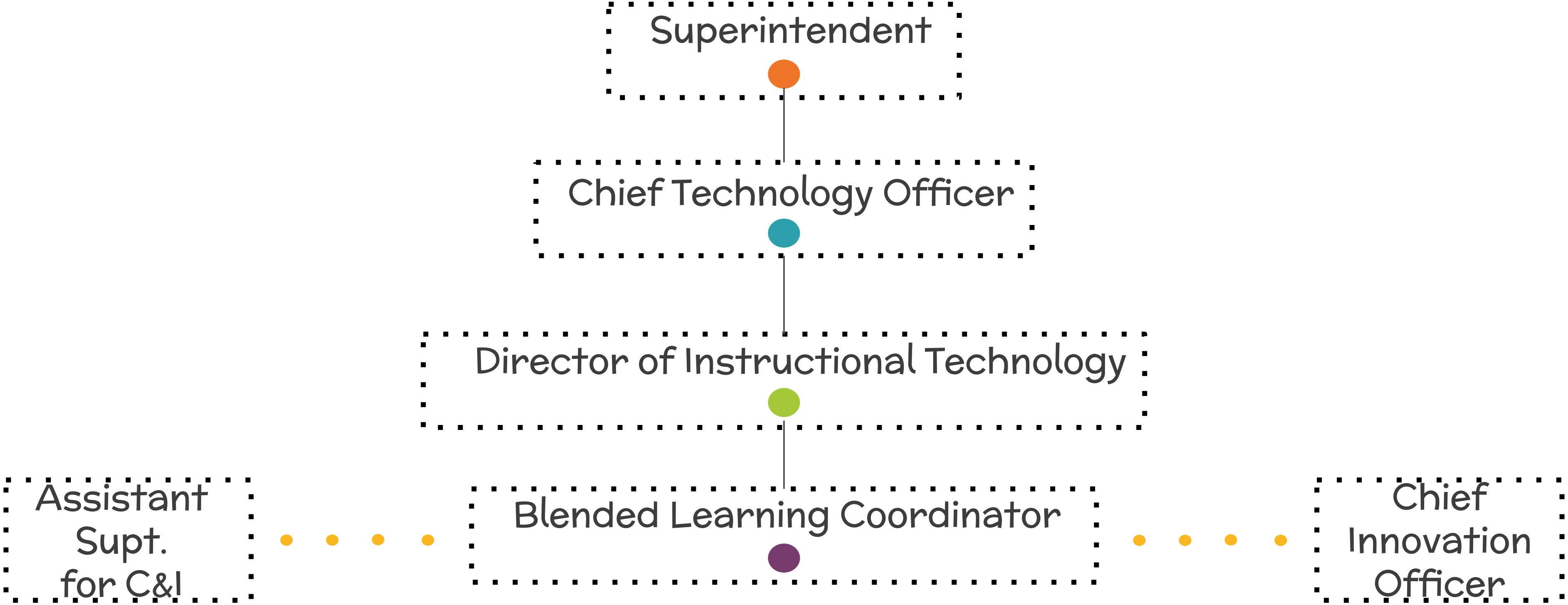
ECISD has made notable progress in the last year under the leadership of Dr. Scott Muri, and I have no doubt that we will continue to improve not only in accountability ratings, but also as an innovative and leading school district in Region 18. It is my hope that Ector County ISD will be chosen for this amazing and exciting opportunity.

Sincerely,

AMessick

Andrea Messick
Blended Learning Coordinator
Ector County ISD

ecisd
OUR students...THE future


Superintendent
Chief Technology Officer
Director of Instructional Technology
Blended Learning Coordinator
Assistant Supt. for C&I
Chief Innovation Officer

A Final Evaluation Report of Savvas' *Interactive Science* Program

March 27, 2013

magnolia consulting
cultivating learning and positive change
www.magnoliaconsulting.org

Executive Summary

As the global race for innovation in science and technology accelerates, U.S. schools are seeking to increase student science achievement. Strategies include creating greater classroom engagement, developing student science inquiry skills, and providing more opportunities for students to investigate and explore. In response to this need, Savvas developed *Interactive Science*, a hands-on, inquiry-based science program.

Savvas recognizes the importance of establishing scientific evidence of effectiveness of educational products. As such, Savvas contracted with Magnolia Consulting, LLC, an external, independent evaluation firm, to conduct an effectiveness study of the Interactive Science program. Magnolia Consulting conducted this study with 61 classrooms and 1,133 students during the 2011-2012 school year.

Study Design & Methods

The purpose of this study was to evaluate the impact of Interactive Science materials on student science achievement and attitudes toward science, and facilitator implementation of the Interactive Science program in grades 4 and 5. Magnolia Consulting conducted a randomized control trial (RCT) of Interactive Science. Given the wide variation in total time for science, evaluators asked treatment classrooms to use the program for at least two hours per week. The final study sample included students from seven schools in six geographically diverse study locations.

Over the course of the study, evaluators collected quantitative and qualitative data including weekly treatment teacher implementation logs, a one-time comparison teacher survey, teacher interviews, and observations of treatment and comparison classrooms. Students completed the SAT-10 science subtest at pretest and posttest as a measure of science achievement, and a science attitude survey at pretest and posttest as a measure of science attitudes.

Program Implementation

KEY QUESTION:

Did teachers implement the curriculum according to the implementation guidelines and with a high level of fidelity?

Interactive Science teachers implemented the program according to implementation guidelines and with high fidelity. Teachers had an overall average fidelity rating of 89% (range 70% to 102%). There were variations in fidelity ratings because of differences in student exposure to the program materials, as evidenced through the weekly logs and in-person observations. One site experienced issues in finding time for science once the study began and spent less than two hours on science instruction each week. Evaluators captured this difference in teacher fidelity scores.

KEY QUESTION:

What were teachers' perceptions and experiences with the materials and components?

Interactive Science teachers had positive perceptions of the program. Teachers appreciated the Teacher Guides provided by the program, especially the teacher background knowledge sections and easy-to-read layout. Teachers reported benefiting from the use of technology and hands-on experiments that actively engaged students in science lessons. Additionally, teachers appreciated the write-in student textbooks and the various interdisciplinary connections included within the program.

Student Learning Results

KEY QUESTION:

Did students in the treatment group demonstrate significant gains in science achievement during the study period? Were there differential effects by implementation fidelity levels?

Students who participated in Interactive Science saw statistically significant gains in science achievement over the course of the study (effect size = 0.33), corresponding to a moderate effect size. There were no statistically significant differential effects by implementation fidelity levels. However, the relationship between fidelity and student gains was positive, suggesting that greater implementation fidelity might be related to higher levels of student gains in a larger study sample.

KEY QUESTION:

How did the science achievement of students in the treatment group compare to that of students in the comparison group?

At the end of the study, Interactive Science and comparison students evidenced comparable science achievement scores that did not statistically significantly differ (effect size = -0.06). Additionally, there was no differential impact of the program within student subgroups of Caucasian, African American, Hispanic, Free/Reduced Lunch Eligible, or Free/Reduced Lunch Ineligible students (effect sizes = -0.13 to 0.03). Overall, students in these subgroups performed comparably at posttest regardless of assignment to the Interactive Science or comparison curriculum.

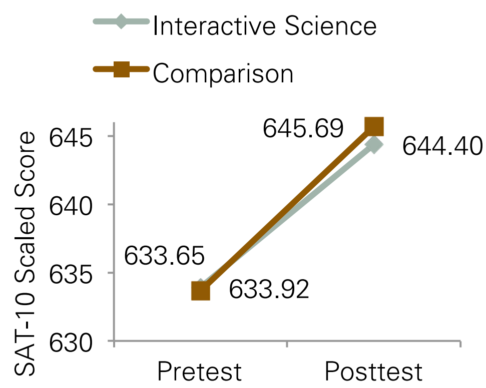


Figure 12. Interactive Science (n = 596) and comparison (n = 511) student mean unadjusted pretest and unadjusted posttest scaled scores

Student Attitude Results

KEY QUESTION:

Did students in the treatment group demonstrate significant gains in their interest and attitudes toward science during the study period?

Over the course of the study, Interactive Science students reported consistently positive science attitudes, with no statistically significant changes over time (effect size = 0.02). Exploratory analyses revealed Interactive Science students had positive science interest and science efficacy over the course of the study. Student science interest did not statistically significantly change over the study (effect size = -0.06), but science efficacy did statistically significantly increase (effect size = 0.20) and translated to a small effect size.

KEY QUESTION:

How did changes in interest and attitudes toward science among students in the treatment group compare to those of students in the comparison group?

There were no statistically significant differences in overall science attitudes between Interactive Science and comparison students (effect size = -0.05). Both groups evidenced comparably high levels of science attitudes at posttest. Follow-up exploratory analyses found no statistically significant differences in science interest or science efficacy (effect sizes = -0.05), with both groups showing similar positive levels of interest and efficacy toward science.

Summary

The results show that Interactive Science was as effective as other high-quality science programs in improving student achievement. This is notable given that Interactive Science teachers only used the program for one year, and comparison teachers had several more years of experience with their programs. Students and teachers reported similarly positive experiences with Interactive Science and other high-quality science programs such as FOSS, and Harcourt Science. Interactive Science teachers and students expressed appreciation for the program and materials offered, especially the in-depth Teacher's Guide, hands-on activities, technology connections, and numerous links to other content areas. Taken together, the results suggest Interactive Science is a high-quality, effective science program enjoyed by teachers and students.

Acknowledgements

The Savvas *Interactive Science* study represents the collaborative efforts of many individuals from Magnolia Consulting, Savvas, and study participants from seven schools across the country. First, we would like to express our deepest gratitude to the teachers and administrators who dedicated an extensive amount of time and effort to the study. We greatly valued your feedback and truly appreciated the opportunity to work with you. Second, we would like to thank the staff at Savvas for their ongoing support and understanding of evaluation, and especially Mary Ehmann for her time, support, and management of the study. We would also like to express our gratitude to Kathi Kalina, who served as the Savvas trainer for the study. Finally, we would like to extend our sincerest thanks to team members who supported the study in a multitude of ways: Dr. deKoven Pelton, Candace Rowland, Beverly Bunch, Monica Savoy, and Dr. Lisa Shannon.

The authors,

Mary Styers, Ph.D.
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Introduction

We live in a rapidly changing world where new scientific discoveries, technologies, and information are shared internationally everyday. The global competition for scientific advancement compels U.S. schools to provide high-quality science instruction that will increase student interest in science, technology, engineering and mathematics (STEM) careers (Committee on Science, Engineering and Public Policy, 2007). The challenges are clear:

- Only 34% of U.S. fourth graders scored at proficient levels in science in the recent National Assessment of Education Progress (National Center for Education Statistics, 2011).
- At least 28% of schools reduced time for science instruction after No Child Left Behind (McMurrer, 2007).
- In California 40% of elementary school students receive less than one hour of science instruction per week (Dorph, Shields, Tiffany-Morales, Harty, & McCaffrey, 2011).
- A nationally representative sample of science lesson observations found that only 15% were high quality (Weiss, Pasley, Smith, Banilower, & Heck, 2003).

Research about successful science education offers insight on the keys to raising achievement. Studies show that students who are actively engaged with science and have confident attitudes toward science are more likely to choose science careers (Riegle-Crumb, Moore & Ramos-Wada, 2011; Natural Research Council, 2012) and to have greater science achievement (Kaya & Rice, 2010). Thus efforts to improve student attitudes and engagement toward science can have immediate and lasting effects. Research suggests that classroom teachers should provide more opportunities for students to investigate and explore science concepts (Logan & Skamp, 2008; Milne, 2010; Weiss et al., 2003). Additionally, developing student inquiry skills is essential, as inquiry enables students to develop a sense of wonder about science (Milne, 2010) and to develop critical thinking skills (National Science Board, 2006). Finally, the National Research Council (2012) suggests eight essential elements for K–12 science and engineering curriculums:

1) asking questions,

2) generating models and investigations,

3) creating and learning through investigations,

4) incorporating data analysis and interpretation,

5) integrating mathematics into science instruction,

6) producing explanations,

7) arguing for positions based on evidence, and

8) the acquisition, evaluation, and sharing of information.

Overall, research indicates that students have the best opportunity for science success in classrooms that nurture their interest and engagement, allow them to investigate and use inquiry skills, and build on their science foundational skills. Savvas developed Interactive Science to help meet the need for a high-quality science program. To examine the impact of the Interactive Science program on student science achievement and interest, Savvas, contracted with Magnolia Consulting, LLC—an external, independent consulting firm specializing in educational research and evaluation—to conduct an effectiveness study of the Interactive Science program in fourth and fifth-grade classrooms during the 2011–2012 school year. This report presents the research design, methods, and findings of the Interactive Science study.

Research Design

The purpose of this study was to evaluate the effectiveness of the Interactive Science program in improving student science achievement and attitudes toward science. The study also assessed teachers' implementation of the Interactive Science program. The evaluation used a cluster randomized trial design with students nested in classrooms to measure the impact of materials on student science performance and attitudes. Specifically, the study addressed the following evaluation questions:

1. Did teachers implement the curriculum according to the implementation guidelines and with a high level of fidelity? What were teachers' perceptions and experiences with the materials and components?
2. Did students in the treatment group demonstrate significant gains in science achievement scores during the study period? Were there differential effects by implementation fidelity levels?
3. How did the science achievement of students in the treatment group compare to that of students in the comparison group?
4. Did students in the treatment group demonstrate significant gains in their interest and attitudes toward science during the study period?
5. How did changes in interest and attitudes toward science among students in the treatment group compare to those of students in the comparison group?

Methodological Approach

Evaluators used a randomized controlled trial design (RCT) wherein evaluators randomly assigned classrooms to a treatment or comparison group. Therefore, within the same school, some classrooms used the Interactive Science program, while others used their existing science curriculum. This design allowed evaluators to estimate the difference between student achievement in treatment and comparison classrooms and to determine if the difference was statistically significant (Raudenbush, Spybrook, Liu, & Congdon, 2005).

Evaluators used hierarchical linear modeling (HLM) to analyze student science achievement and science attitude data. HLM, also known as multilevel modeling, allows evaluators to account for nesting of data or multilevel information (Raudenbush & Byrk, 1986). Nesting occurs when there is a unit of observation at one level located within some observations at another level (MacCallum, Kim, Malarkey, & Kiecolt-Glasser, 1997). In this study, where students are nested in classrooms and schools, HLM allows evaluators to account for variance in student science achievement outcomes at both the student and the classroom/school level. For example, student-level variance might be related to socioeconomic status, baseline science achievement and gender. Classroom and school-level variance might be related to implementation fidelity and classroom-level demographics. HLM analyses account for the fact that student experiences within schools and classrooms are not independent, and as a result, should be analyzed as nested data. In this study, evaluators used HLM to examine

Interactive Science student gains in science achievement and attitudes from the beginning to the end of the study, and to compare end-of-year science achievement between Interactive Science students (treatment group) and students who continued with their existing science curriculum (comparison group).

Evaluators calculated effect sizes to determine the difference between treatment and comparison group end-of-year achievement and attitude scores. Additionally, evaluators conducted descriptive and non-parametric analyses related to student and teacher characteristics, program implementation, and student pretest and posttest science achievement and attitudes. Finally, evaluators conducted additional analyses to identify any differences in treatment and comparison group equivalence and attrition.

Measures

Evaluators used a combination of quantitative and qualitative methods to study the implementation and impact of the Interactive Science program. A Savvas researcher and Savvas trainer conducted initial site visits to orient participants to the evaluation study and to provide training on program implementation. Magnolia Consulting collected descriptive, implementation, and outcome data throughout the study. This section describes the student and teacher measures.

Student Measures

Evaluators used the Stanford Achievement Test, Tenth Edition (SAT-10) to assess students' science skills, and developed a customized survey to measure students' attitudes toward science. Reliability information for both measures is available in Appendix A.

Stanford Achievement Test, Tenth Edition (SAT-10)

The SAT-10 is a norm-referenced, group-administered assessment that measures a number of content areas, including science, reading, and mathematics. The assessment uses a multiple choice format and is appropriate for administration in the fall and spring. Primary 3 is appropriate for the beginning of fourth grade, Intermediate 1 is appropriate for the end of fourth grade and the beginning of fifth grade, and Intermediate 2 is appropriate for the end of fifth grade. Each of these levels includes a Science subtest with cluster scores including Earth Science, Life Science, Physical Science, Nature of Science, Basic Understanding, and Thinking Skills. All three test levels—Primary 3, Intermediate 1, and Intermediate 2—consist of 40 test items and take approximately 25 minutes to complete. Available scores for the SAT-10 include Normal Curve Equivalents, National and Local Percentile Ranks and Stanines, Grade Equivalents, Cluster Performance Scores, and Scaled Scores. Evaluators used scaled scores to analyze student science achievement outcomes.

Student Attitude Survey

As part of the pilot study, Haden (2011) developed an attitude survey to measure student attitudes before and after using Interactive Science. The attitude survey included 18 questions that assessed student attitudes toward science. Twelve questions pertained to science interest and six related to science efficacy. Haden (2011) asked students to rate a series of statements using a 5-point scale ranging from, 5, *Really Agree* to 1, *Really Disagree*. For example, the first question stated, “Science is interesting to me.” In the present study, teachers administered a pretest attitude survey that included all 18 items from the pilot study. The posttest survey repeated those items and included a question related to students’ general perceptions of the Interactive Science program and materials.

Teacher Measures

To measure program implementation and teacher perceptions, evaluators collected data from multiple sources. Treatment teachers completed weekly online implementation logs, and comparison teachers completed a classroom instruction survey during spring 2012. Savvas research team members conducted classroom observations and interviews to assess fidelity of implementation and to capture teacher perceptions of the program. Implementation data provides important information concerning the nature of teachers’ program use and the effectiveness of materials in improving students’ science skills. Teacher measures increase the validity of qualitative findings by (a) triangulating data through multiple data collection methods; (b) capturing the perspectives of various participants; and (c) collecting data throughout the project period (Erickson, 1986).

Teacher Implementation Log

Participating teachers completed weekly 15-minute online implementation logs that gauged the breath and depth of their use of the Interactive Science program. Teachers indicated (a) the frequency and extent to which they implemented specific Interactive Science components and materials, (b) how often they used the program’s additional resources, including assessments, and (c) their perceptions about the Interactive Science program. The final implementation log included additional open-ended summative questions and pertained to:

a) the classroom learning environment, including important characteristics of school culture and student population which influenced the learning context,

b) teacher perceptions of program strengths and challenges,

c) modifications to teacher instructional practices,

d) instructional support,

e) observations of student impacts (i.e., learning and motivation),

f) use of digital components, and

g) future program use.

The weekly logs served as a mechanism to measure program variation and fidelity of implementation. Evaluators aggregated data from the logs and combined log data with aggregate observation data to arrive at a rating to describe teachers’ fidelity. At the initial participant orientation, the Savvas researcher and trainer encouraged teachers to follow implementation guidelines (Appendix B) in order to implement the program with high fidelity.

Observation Protocols

To gauge program implementation, Savvas research team members observed teacher and student actions during 30–40 minute intervention periods twice during the 2011–2012 school year. Evaluators used Interactive Science observation protocols created during the pilot study (Haden, 2011) and developed new observation protocols for comparison teachers. During each observation, researchers completed a checklist for materials used by teachers and students during the observation (e.g., Teacher's Edition, student write-in textbook, kit materials) and rated program adherence, teacher quality, and student responsiveness across 17 indicators (e.g., teacher-student interactions, lesson delivery, instructional strategies). The observation protocol allowed researchers to indicate the extent to which teachers employed various implementation indicators and to take notes on observations.

Evaluators quantitatively and qualitatively used the observation data to triangulate other data sources and to calculate observer implementation fidelity ratings. Savvas researchers established inter-rater reliability through a visit to Site 6 in the fall of 2011. Two researchers observed the same classroom and provided individual ratings during the observation. Following observation and individual determination of ratings for the seventeen indicators, the two Savvas researchers conducted a debriefing of the observation, establishing a high level of agreement for indicators (average measures intraclass correlation coefficient = .80).

Interview Protocols

Evaluators used treatment teacher interview protocols developed during the Interactive Science pilot study (Haden, 2011) and created new interview protocols for comparison teachers. Savvas researchers interviewed treatment teachers in the fall and spring, and a sample of comparison teachers in the spring. The interviews took place following researchers' observations of science instructional periods. Fall and spring interviews focused on teacher perceptions of their program including opinions of program implementation, quality and utility, and perceived effects on student science learning and attitudes.

Comparison Teacher Survey

Comparison classroom teachers completed one 20-minute survey about their science program and classroom instruction in spring 2012. The online survey included questions related to dosage, instructional materials, nature of program delivery, student engagement, and program perceptions. Evaluators developed the comparison teacher survey to mirror questions on the weekly treatment teacher implementation logs.

Study Procedures

Evaluators used several procedures to ensure effective study implementation. This section describes procedures for site selection, data collection timeframe, and implementation.

Site Selection and Group Assignment

Evaluators and Interactive Science program developers co-created specific criteria for study inclusion to ensure a diverse study population. The selection criteria influence the extent to which findings can be generalized to a broader group of students. Preferred selection criteria included

1) interest in using Interactive Science in grades 4 and 5,
2) use of Interactive Science for at least 2 hours per week,
3) no year-round schools,
4) comfort with random assignment of classrooms,
5) geographic and ethnic diversity, and
6) low student mobility (less than 15%).

Once evaluators formally accepted sites into the study, evaluators randomly assigned classrooms to participate in the Interactive Science program or to continue using their existing science curriculum.

Study Timeframe

Table 1 displays the timeline of study activities. The initial Interactive Science product training and study orientation (both led by Savvas) occurred within the first four weeks of school for each site. After the training, teachers administered the SAT-10 and science attitude surveys to all treatment and comparison students and began program implementation. Savvas research team members scheduled the initial site observation for 8 to 17 weeks after program implementation, ranging from October 2011 to February 2012. During the first site visit, Savvas research team members observed 27 out of 36 Interactive Science classrooms and interviewed 25 out of 25 Interactive Science teachers. At the initial site visit, Savvas research team members observed each teacher once, but missed the opportunity to observe multiple sections at schools in Sites 1 and 2. Additionally, one teacher in Site 5 was absent during the fall observations.

Evaluators distributed the one-time comparison teacher survey during March and April 2012. Savvas research team members conducted the final site visits in April through June 2012, interviewing 35 out of 39 observed teachers and observing 43 out of 49 classrooms, which included all Interactive Science classrooms and a sample of comparison classrooms. Savvas research team members were unable to interview several observed teachers immediately following the observation or in subsequent weeks because of scheduling constraints and lack of response from participating teachers. Additionally, Savvas research team members observed all Interactive Science teachers, but not all classrooms in spring 2012 because of scheduling constraints at Sites 1 and 2. One teacher at Site 3 resigned from the school before the spring observation but after spring testing occurred. As a result, Savvas research team members did not observe this teacher in the spring. Schools administered the final SAT-10 assessment and student attitude survey in April and May 2012.

Table 1. Timeline of study activities

TASK AND ACTIVITY	August	September	October	November	December	January	February	March	April	May	June
Training, study orientation, study begins	Sites 1, 4, 6	Sites 2, 3, 5									
Administration of SAT-10 and student attitude survey	◆	◆							◆	◆	
Administration of weekly implementation log		◆	◆	◆	◆	◆	◆	◆	◆	◆	
Observations and Interviews			Site 6	Site 2	Sites 1, 5	Site 4	Site 3		Sites 2, 5, 6	Sites 1, 4	Site 3
Comparison teacher survey								◆	◆		
End study										Sites 1-2, 4-6	Site 3

Note. ◆ = Data collection point

Implementation Fidelity

To ensure study teachers implemented the Interactive Science program with fidelity, evaluators monitored program implementation through site visit reports and weekly implementation logs.

Training and Site Visits

One Savvas trainer provided the training for the pilot and the Interactive Science study. During the seven-hour training, the trainer provided an orientation to the study, addressed the program design and layout, conducted a walk-through of the program, included an overview of implementation guidelines, shared a model lesson, and provided lesson-planning advice.

Savvas research team members tracked fidelity to the Interactive Science program through site observations and interviews, which provided quantitative and qualitative measures of program implementation. During observations, Savvas research team members observed teacher-student interactions, use of instructional strategies, lesson delivery, student engagement, and classroom culture.

Evaluators and Savvas research team members explicitly conveyed that comparison classrooms should not see or receive any materials or information from the Interactive Science program. Comparison teachers indicated that they understood the importance of avoiding contamination between treatment and comparison groups. Site 1 was the only site where treatment teachers also served as comparison teachers. In this site, science teachers taught entire grade levels of students and divided their science instructional time between the Interactive Science program (2 classes) and their previous science curriculum (1 class). During the spring site visit, Savvas research team members confirmed that comparison students only received materials and information from their existing science curriculum.

Implementation Guidelines

As part of the study, evaluators provided schools with a copy of the study implementation guidelines (Appendix B). The implementation guidelines specified the minimum time to spend on the program each week; required chapters; and required, recommended, and optional program components. Because of the variance in time available for science across districts, evaluators asked that teachers spend at least two hours per week on science instruction.

Implementation Logs

Treatment teacher implementation logs allowed evaluators to track program implementation over the course of the study. Evaluators created the weekly logs using Interactive Science Teacher Editions and examined the logs for any indicators of low implementation or requests for support. In the event that Interactive Science teachers needed additional training or support, evaluators contacted the Savvas trainer for feedback and evaluators provided information to teachers through emails or "Q & A" documents delivered to all treatment teachers. This process allowed for monitoring and support of high program implementation.

Settings

The study sample represented seven schools across six districts. A total of 1,133 students (608 treatment and 525 comparison), 42 science teachers and 61 classrooms participated in the study. As displayed in Table 2, the six school districts were located in the West, Midwest, and Northeast. Districts varied in total student enrollment and the percentage of students qualifying as low-income. Across half of the sites, there was a large degree of ethnic diversity (e.g., Sites 1, 3, and 4). Past performance on state science tests ranged from *below average* to *above average*.

Table 2. Site characteristics by school district/site

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6
Geographic location and City description*	Midwest; Suburb, Large	Northeast; Suburb, Large	West; City, Large	Northeast; City, Large	Northeast; Rural, Fringe	Midwest; Suburb, Large
Total student enrollment	18,837	1,709	667,807	27,445	1,768	1,713
Percent qualifying as low-income	52.74%	2.75%	76.56%	85.20%	28.22%	53.30%
Ethnic breakdown						
Caucasian	27.85%	89.70%	8.83%	1.21%	81.00%	73.32%
African American	69.21%	1.35%	10.20%	85.67%	7.30%	22.83%
Asian	1.19%	6.32%	5.84%	1.53%	0.74%	0.41%
Hispanic	1.61%	2.52%	73.73%	11.13%	3.39%	3.04%
Other	0.13%	0.12%	1.38%	0.45%	7.58%	0.41%
Past performance on statewide science assessments	Below Average	Above Average	Average	Average	Average	Below Average

Note. Site 3 is a public charter school and the demographic data reflects the district in which it is located; * City description as defined by the National Center for Education Statistics at http://nces.ed.gov/ccd/commonfiles/localedescription.asp#NewLocale

Participants

Science teachers included 19 instructors who taught treatment groups, 18 who taught comparison groups, and 5 who taught treatment and comparison groups. The final student analysis sample for the study included 1,133 students (608 treatment and 525 comparison) (see Appendix C for school-level characteristics). At the beginning of the study, schools identified school and district study coordinators to serve as the main study contacts. Coordinators' responsibilities included delivery of materials, scheduling site visits, and supporting program implementation and assessment delivery.

Teacher Participants

A total of 42 science teachers participated in observations and interviews, and provided weekly log implementation data. As a benefit of study participation, all study teachers received Interactive Science materials and training free of charge. Treatment teachers received training and materials in the fall of 2011 and comparison teachers received training and materials in summer of 2012. The estimated value of materials was $4,500 per teacher, and the training was valued at an estimated $3,000 per teacher. Study teachers and coordinators also received $150 to $250 stipends for their contributions to the study. Before beginning the study, teachers and coordinators signed an informed consent form indicating their understanding of study requirements.

Study teachers held a master's degree (56%), college degree (43%), or a Ph.D/Ed.D (2%), and had been teaching for an average of 12.57 years. Teachers had anywhere from 3 to 30 students in their science classrooms and averaged 19 students per class.

Student Participants

The following section describes attrition analyses in the overall student sample, presents student demographics in the analysis sample, and discusses group equivalence.

Sample Attrition

Evaluators conducted two types of attrition analyses: overall sample attrition and differential attrition. Evaluators measured overall sample attrition by determining the number of students who began and completed the study, based on student classroom rosters and available student data. The overall sample attrition rate was 7.6%.

Evaluators measured differential attrition by calculating attrition rates for treatment and comparison samples and conducting chi-square analyses to determine if these rates statistically significantly differed from each other. The attrition rate for the treatment sample was 8.3%, and the attrition rate for the comparison sample was 6.8%. The differential attrition rate was 1.5%. Chi-square analyses revealed that there was not a statistically significant difference in attrition rates by condition χ^2 (1, n = 1248) = 0.72, p = .40. Because overall attrition was less than 10% and the differential attrition rate was less than 6%, the attrition for this study falls within acceptable levels based on What Works Clearinghouse (WWC) standards (What Works Clearinghouse, 2011).

Analysis Sample

The Interactive Science CONSORT model describes sample flow from pretest to posttest and shows the total number of students included in the analysis sample (Appendix D). Evaluators included students in the analysis sample if they had study data for pretest and posttest on at least one measure. Based on these inclusion criteria the analysis sample consisted of 1,133 students (608 treatment and 525 comparison).

Table 3 details demographic information for students in the analysis sample. Approximately one-half of the students (50%) were male and one-half (50%) were female. Across grades and treatment conditions, 65% were Caucasian, 16% of students were African American, 15% were Hispanic, 2% were Asian, and 2% were categorized as either multiracial, American Indian or other. Thirty-seven percent of students qualified for free or reduced-priced lunch. Twelve percent of the sample included special education students, and districts classified 5% of the study students as Limited English Proficient (LEP). Finally, districts categorized 3% of students as Section 504[1].

Table 3. Student demographics by group

Characteristics	Comparison Students (*n* = 525)		Treatment Students (*n* = 608)		Total Students (*n* = 1,133)		Chi-square Results	
	Percent	*n*	Percent	*n*	Percent	*n*	Value	Sig. (alpha = 0.05)
Grade								
4th	49.0%	257	47.7%	290	48.3%	547	.13	.72
5th	51.0%	268	52.3%	318	51.7%	586		
Gender								
Male	48.1%	248	50.8%	296	49.5%	544	.70	.40
Female	51.9%	268	49.2%	287	50.5%	555		
Ethnicity								
African-American	13.0%	62	17.7%	91	15.5%	153	7.94	.09
Hispanic	16.4%	78	14.4%	74	15.4%	152		
Asian	1.7%	8	2.7%	14	2.2%	22		
Caucasian	67.7%	323	62.8%	322	65.2%	645		
Other	1.3%	6	2.3%	12	1.8%	18		
Free/Reduced Lunch (FRL)								
FRL	40.1%	183	34.8%	167	37.4%	350	2.63	.11
Non-FRL	59.9%	273	65.2%	313	62.6%	586		
English Proficiency								
LEP	5.3%	24	5.6%	27	5.4%	51	.01	.92
Non-LEP	94.7%	432	94.4%	453	94.6%	885		
Special Education								
Special Ed	9.9%	45	13.1%	63	11.5%	108	2.12	.15

[1] Section 504 of the Rehabilitation Act of 1973 requires public schools to provide modified or supplemental instructional aid to students with physical or mental impairments who are not classified as special education students.

Characteristics	Comparison Students (*n* = 525) Percent	*n*	Treatment Students (*n* = 608) Percent	*n*	Total Students (*n* = 1,133) Percent	*n*	Chi-square Results Value	Sig. (alpha = 0.05)
Non-Special Ed.	90.1%	411	86.9%	417	88.5%	828		
Section 504								
Section 504	1.3%	6	4.0%	19	2.7%	25	5.31	.02
Non-504	98.7%	450	96.0%	461	97.3%	911		

Note. Student-level demographic data was not available for the majority of students in Site 1.

Group Equivalence

To ensure the validity of the study's findings, it is important to demonstrate treatment and comparison-group equivalence regarding student demographic characteristics and pretest performance. Based on WWC recommendations, researchers conducted analyses to establish baseline equivalence of the analysis sample. Specifically, as shown in Table 3, evaluators conducted chi-square analyses to examine differences in student demographic characteristics between treatment and comparison groups. These analyses demonstrated that males and females were equally likely to be in the treatment and comparison groups, as were students with LEP, students with disabilities, and students in special education. Students of various ethnicities were also equally likely to be in the treatment and comparison groups, as well as students qualifying for free or reduced-price lunch. There were statistically significant differences by Section 504 status, with the treatment group having a greater percentage of Section 504 students than the comparison group. Evaluators also conducted HLM analyses to examine differences in student pretest performance between treatment and comparison groups (Table 4). These analyses revealed no statistically significant differences between groups on pretest mean SAT-10 Science scaled scores. There were, however, pretest differences in student attitudes toward science, with the comparison group scoring higher than the treatment group. To account for preexisting differences in demographics and student attitudes, evaluators used pretest achievement and pretest attitude covariates in analyses (Bloom, Richburg-Hayes, & Black, 2007; Hedges & Hedberg, 2007).

Table 4. Group equivalence at pretest

Outcome Measure	Coefficient	Standard Error	*t*-Value	Approx. *df*	*p*-Value
Pretest Science Scaled Score	-1.56	4.51	-0.35	59	.73
Pretest Science Attitude Mean	-0.14	0.07	-2.21	59	.03*

*Significant at the .05 level.

Program Description

This section of the report describes the Interactive Science program used by treatment teachers in this study and provides an overview of other science programs used by comparison teachers.

Interactive Science

Savvas' Interactive Science program is a standards-aligned K–8 program intended to promote student interest and engagement while covering key science content designed to increase students' understanding of the natural world. The national version of the fourth and fifth grade Interactive Science program used in this study consists of 10 and 12 chapters respectively. These chapters address topics in life science, earth science, physical science, and the nature of science. Lessons in each chapter are structured around a Big Question, which incorporates the overarching theme for the chapter and provides a point of reference to tie together lessons.

The Interactive Science curriculum is unique in that it features three paths (i.e. text, inquiry, and digital). The text path includes the write-in student edition and the science reference library. The inquiry path features hands-on labs and activities. The digital path features an online learning environment where teachers can connect with students and manage their classes. Teachers are able to focus on one path or blend all three together.

Interactive Science lesson content is organized around the 5E learning cycle model: engage, explore, explain, elaborate, and evaluate. Each lesson begins with Envision It! (text-based discussion) consisting of an image with a question designed to activate prior knowledge and to set context for learning. The program contains multiple opportunities for inquiry-based learning through labs and activities that support key concepts within the chapter. Students begin the lesson with an activity (Try It!) designed to activate prior knowledge and set the stage for learning science content. Additional inquiry activities within the lessons (Explore It!) are designed to provide students with meaningful ways to apply and support concepts within the lessons. Shorter inquiry activities within the lessons (Lightning Labs, Go Green Labs, and At Home Labs) provide additional support for understanding the content. An inquiry activity at the end of the chapter (Investigate It!) offers a way to pull together learning from all of the lessons within the chapter and apply it to an investigation.

Interactive Science includes individual student write-in textbooks that allow students to connect with the text while exploring the Big Ideas. Throughout each lesson students have multiple opportunities to interact with the text by drawing and diagraming, graphing, answering questions, highlighting main ideas, and taking notes in the book. Students assess their own learning through answering the Got It! questions featured at the end of each lesson. Text within each chapter is designed to support reading goals while addressing standards-based science content. Vocabulary Smart Cards are included in each chapter of the student edition to support vocabulary acquisition. Additionally, Do the Math! activities within the chapters provide opportunities to make mathematics connections with science content.

Teaching resources within each chapter include guides for lesson planning and tips for differentiating instruction, supporting English Language Learners (ELL), and addressing common student misconceptions. Additionally, each chapter contains a section providing background information for teachers. Content refreshers within each lesson provide teachers with support as they are teaching. The program also provides several ancillary materials for teachers. The Social Studies and Language Arts Connections book provides information on integrating social studies and language arts with science content. The Science, Technology, Engineering and Mathematics (STEM) activity handbook provides additional activities designed to focus on real-world problems.

Comparison Programs

Comparison teachers in Site 1, Site 3, Site 4, and Site 5 reported using Full Option Science System (FOSS) kits for science instruction. In addition, Site 2 and Site 4 used the Harcourt Science Curriculum. Site 6 focused on homegrown materials in the classroom supplemented by the Harcourt Science textbook. Site 2 supplemented with a variety of homegrown and online supplemental materials such as BrainPop, Discovery Education, United Streaming, YouTube, and Teacher Tube.

This section provides a brief overview of programs that comparison teachers used during the study. For a more detailed comparison curriculum analysis, see Appendix E.

FOSS Kits

FOSS (K-8) is a kit-based science curriculum developed by the Lawrence Hall of Science. Early elementary students learn science through describing, sorting, and organizing observations about objects and organisms. Upper elementary students construct more advanced concepts by classifying, testing, experimenting, and determining cause-and-effect relationships among objects, organisms, and systems. Students use integrated reading, writing, and mathematics as well as technology to learn important scientific concepts and critical thinking. Topics include life science, physical science, earth science, and scientific reasoning and technology. The FOSS materials consist of teacher guides, teacher preparation videos, student interactive activities on CD-ROM, equipment kits, living materials, science stories, and student notebooks. The program provides strategies for informal assessments, such as anecdotal notes and student interviews, and supplies formal end-of-module assessments. Additionally, FOSS provides Spanish editions for ELL students.

Harcourt Science

Harcourt Science (K-6) provides skill-building exercises designed to help educators engage and inspire students. The curriculum provides cross-curricular activities, projects, and experiments that enrich and extend science. Harcourt Science focuses on life science, physical science, earth and space science, biology, chemistry, and environmental science. Materials include curriculum books, lab manuals, science fair books, flash cards, science kits, resource books, software and videos, and big books. The curriculum supplies online assessment resources and teacher assessment books. Harcourt Science provides an instructional support book and online materials for ELL students.

Homegrown

Site 2 and Site 6 provided homegrown materials for primary or supplementary science instruction. Homegrown approaches provided interactive and animated content instruction and support such as BrainPop, Discovery Education, United Streaming, YouTube, and Teacher Tube (Site 2). Teachers also created various curriculum materials based on state standards (Site 6). Teachers used the following materials in homegrown programs: student puzzles, activity worksheets, homework help, science videos, interactive white board, and teacher webinars. Discovery Education provides customized assessment generators and BrainPop offers pretests, posttests and quizzes.

Program Implementation and Perceptions

This section of the report describes how treatment teachers implemented the Interactive Science program in their classrooms, and includes information on dosage, adherence to implementation guidelines, modifications, student engagement, and teacher perceptions. Additionally, this section addresses how comparison teachers implemented existing science programs with their students.

Interactive Science Implementation

KEY QUESTION:

Did teachers implement the curriculum according to the implementation guidelines and with a high level of fidelity? What were teachers' perceptions and experiences with the materials and components?

Treatment teachers completed weekly online implementation logs, where they provided feedback on their use of the Interactive Science program. Overall, treatment teachers completed a mean of 98% of weekly logs. Information on response rates by school is available in Appendix F, Table F1.

On average, treatment teachers used the Interactive Science program 3.53 days per week. Schools varied in the total weekly time available for science instruction (Table 5). After the study began, teachers in site 3 found they could not fit science instruction into their daily curriculum for 120 minutes per week. They spent an average of 94 minutes on weekly Interactive Science instruction and 53 total days using the program. Additionally, teachers in Site 5 spent an average of 243 minutes each week on science instruction, but only spent an average of 77 total days using Interactive Science. This difference is explained by their need to alternate between one month on social studies and one month on science instruction throughout the school year.

Table 5. Interactive Science average weekly time (minutes) and average total days of science instruction

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6
Average weekly time in Interactive Science (minutes)	245.58	211.08	93.93	198.73	242.99	148.49
Average total days of Interactive Science	117.00	143.50	52.50	82.00	76.83	92.30

Across all sites, teachers spent an average of 50.07 minutes on science during an instructional period. Teachers spent an average of 50 minutes planning and preparing for their Interactive Science lessons each week.

At the beginning of the study, evaluators asked teachers to refrain from supplementing the program. However, in 9% of all weekly logs, teachers reported supplementing science instruction. Teachers included the following types of supplementation: additional quizzes (n = 18), activities (n = 17), science videos (n = 11), websites (n = 10), and games (n = 3). Teachers noted that each of these components aligned with Interactive Science instruction.

Use of Program Components

Teachers varied in their coverage of Interactive Science chapters because of fluctuating times available for science instruction and different state requirements for science lesson content. Because of state testing requirements, schools gave more emphasis to reading and math and less emphasis to other content areas. Overall, schools completed 3 to 9 Interactive Science chapters (see Tables F2-F3 in Appendix F for a complete breakdown by grade level and school). Corresponding to total days spent on Interactive Science, sites 3 and 5, on average, completed the fewest number of chapters.

Teachers reported weekly on their use of Interactive Science program components. The most frequently used components were the student write-in textbook and Teacher's Edition (Figure 1). The least frequently used components were the activity cards, which offer three different types of inquiry during the Investigate It! activity. When teachers did use activity cards, they reported using guided inquiry (56%) most frequently, followed by directed inquiry (41%) and open inquiry (3%).

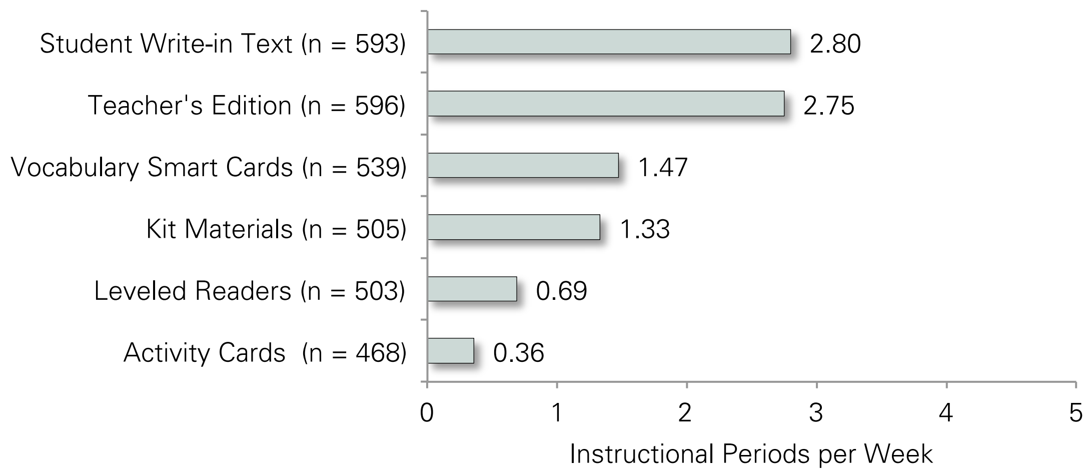

Figure 1. Teachers' instructional periods per week using program components across all implementation logs

When planning their instruction, teachers used a variety of Teacher's Edition components. The following represents the average number of instructional periods in which teachers used each component within a one-week period, across all implementation logs:

- Lesson Plan (2.27)
- Chapter Resource Guide (1.61)
- Teacher Background (1.34)
- Content Refresher (0.97)
- Lab Support (0.85)
- Differentiated Instruction (0.84)
- Response to Intervention (0.59)

- ELL Lesson Plan (0.40)
- ELL Support (0.40)

In fall and spring interviews, teachers commented on the ease of use of the Teacher's Editions/Guides, often noting that the layout was easy to navigate and made science lessons easy to prepare. Teachers also frequently commented that the Teacher's Guides helped to build background knowledge in the content area. Some teachers believed they were learning from the background knowledge presented in the curriculum and reported sharing this information with their students.

TEACHER QUOTES:
The Teacher Guide is really well written. It spells everything out for you. It tells you the levels, ELL support, professional development piece. It supports the teaching. [Grade 5 Interactive Science teacher, Fall Interview]

The Teacher's Guide is invaluable. I've had to do Internet searches for science content before but the answers to everything I've wondered about the lessons are in the Teacher's Guides. [Grade 4 Interactive Science teacher, Spring Interview]

Additionally, teachers reported using the optional Social Studies and Language Arts Connections book and optional Science, Technology, Engineering and Mathematics (STEM) activity handbook in 8% and 2% of logs, respectively.

Use of Chapter-Level Components

Interactive Science chapter-level components included inquiry activities and chapter reviews. Overall, teachers used Try It! (43% of logs) and Investigate It! (36% of logs) most frequently across reporting weeks. Try It! and Investigate It! presented inquiry activities at the beginning and ending of each chapter, respectively. Additionally, teachers used the Chapter Study Guide (25% of logs), Let's Read Science (24% of logs), and online Chapter Opener (14% of logs).

Use of Lesson Components

Each lesson begins with Envision It!, containing a picture and discussion surrounding the objectives for the lesson. Explore It! is comprised of inquiry activities at the beginning of each lesson. The most commonly used lesson components included Envision It! and the inquiry activities in Explore It! Figure 2 displays the percentage of lesson component use across all implementation logs.

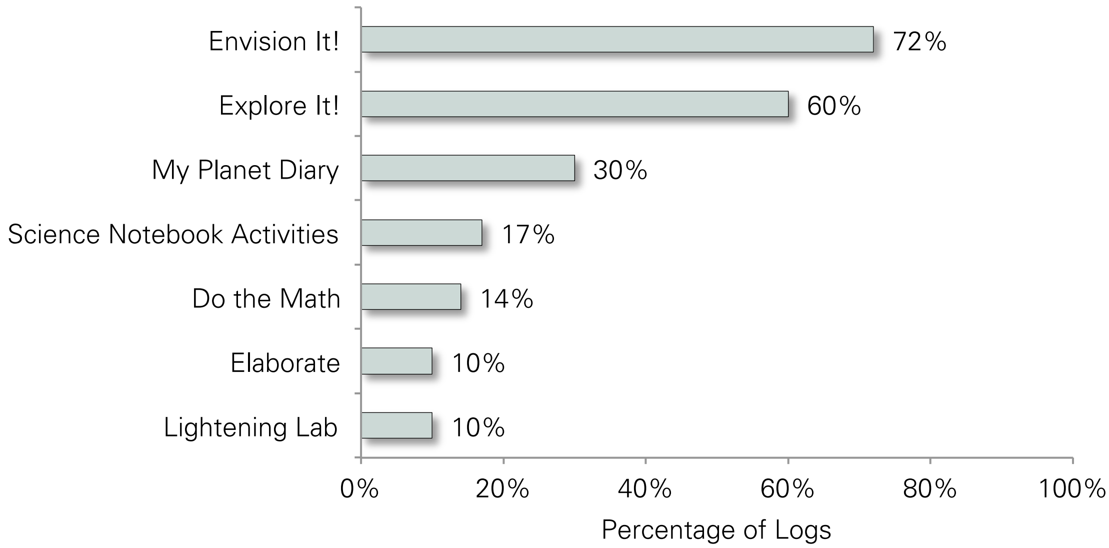

Figure 2. Teacher use of lesson components across all implementation logs (n = 605 logs)

Use of Assessments

The Interactive Science program offers many different types of assessment within lessons and chapters. Overall, teachers reported using student interactivities (writing and drawing in the text) most frequently (85% of logs), followed by Got It? student self-assessments at the end of each lesson (77% of logs), and Lesson Check worksheets (65% of logs).

At the end of each chapter, teachers frequently reported using the Chapter Review (27% of logs), Chapter Test (20% of logs), Test Preparation (15% of logs), Benchmark Practice (14% of logs) and Chapter Concept Map (11% of logs) assessments.

Use of Technology

As part of the study, teachers received optional access to Interactive Science digital components on the Savvas website. In the final weekly log,[2] evaluators asked teachers about their use of digital components. Teachers could select multiple response categories and reported using digital components as follows:

- Every other science class (*n* = 5 teachers)
- Every science class (*n* = 3 teachers)
- Once per lesson (*n* = 3 teachers)
- Every 3 to 4 science classes (*n* = 4 teachers)
- Not at all (n = 2 teachers)
- Once per chapter (*n* = 1 teacher)

[2] A total of 18 teachers completed the final weekly log. Six teachers did not complete the final weekly log (two from site 1, one from site 3, and three from site 5).

- Rarely (*n* = 1 teacher)
- Most science classes (other response) (*n* = 1 teacher)

When teachers integrated digital components into their science instruction, most reported using whiteboards or SmartBoards (*n* = 14), while others used computer labs (*n* = 2), laptop computers in small groups (*n* = 1), or students accessed digital components at home (*n* = 1). Two teachers reported that they did not use the digital components. One teacher explained that they did not have the technology to support it, and the other cited issues with accessing the online program.

Teachers who used the online resources and technology reported that students enjoyed these components. In the fall interview, one teacher summed up student engagement with a quote about a particular video.

> **TEACHER QUOTE:**
> *They [students] really like the technology. The videos are huge. One has a dragon that tries to eat a boy in the beginning. They are beside themselves when they see that. They love it! [Grade 4 Interactive Science teacher, Fall Interview]*

Implementation Fidelity

The following section details the extent to which Interactive Science teachers implemented the program with fidelity. In quantifying implementation fidelity, evaluators included 20 variables from the weekly logs (indicators of dosage, adherence, and program exposure) and 17 indicators from the site observations (indicators of adherence, quality, and exposure). For each indicator, evaluators compared actual performance to expected performance. To obtain the final implementation fidelity score, evaluators equally weighted aggregated weekly log mean and site observation mean scores. The implementation fidelity grand mean for 12 fourth grade and 11 fifth grade teachers was 89%, indicating that teachers implemented the program with fidelity. Overall, 91% of teachers implemented the program with high fidelity and 9% implemented the program with moderate fidelity (Table 6). Implementation fidelity scores by grade level and school are available in Appendix F, Tables F4-F5. Fall and spring observations of Interactive Science classrooms confirmed the high levels of implementation fidelity in this study.

Table 6. Implementation fidelity levels of Interactive Science teachers

	Fourth Grade (*n* = 12)	Fifth Grade (*n* = 11)	Overall (*n* = 23)
High Fidelity (80% or higher)	11	10	21
Moderate Fidelity (60% to 79%)	1	1	2
Low Fidelity (59% or lower)	0	0	0

Teacher Perceptions of Interactive Science

In their weekly and final logs, and fall and spring interviews, teachers offered feedback on their perceptions of Interactive Science program implementation, materials, ability to meet student needs, student attitudes and engagement, and overall program perceptions.

In the weekly logs, teachers commented on the perceived ease or difficulty in implementing the program and planning for instruction. Overall, in the majority of logs (95%) teachers believed the Interactive Science program was at least *somewhat easy* to implement (Figure 3). Additionally, in most logs (96%) teachers commented that lessons were at least *somewhat easy* to plan and prepare (Figure 4). In their fall and spring interviews, teachers frequently commented on the ease of setting up labs for students and generally believed there were sufficient materials for successful implementation. On some occasions, teachers requested that Savvas provide all of the materials for an activity or experiment in one bin instead of across different bins. Teachers also believed the lessons were easy to follow.

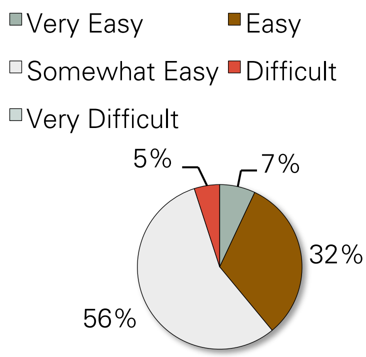

Figure 3. Teachers perceptions related to ease of program implementation across all implementation logs (n = 597 logs)

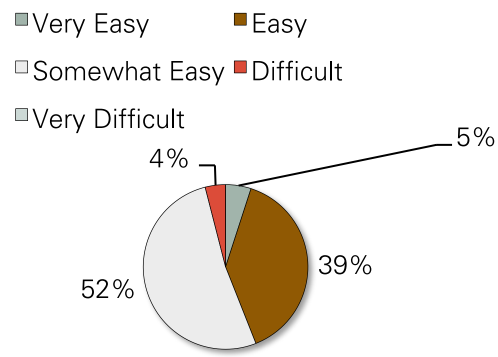

Figure 4. Teachers perceptions related to ease of planning and preparation across all implementation logs (n = 597 logs)

Each week, teachers commented on the amount of material covered and the pacing of their instruction. Across reporting weeks, 73% of logs indicated teachers found the amount of material was *just right* (compared to 22% of logs indicating there was *too much to cover* and 5% indicating there was *not enough*). Additionally, in most logs (73%), teachers indicated their instruction was *reasonably paced*, compared to *fast paced* (18%) or *slow paced* (9%). In their fall interviews, teachers thought that there was frequently too much to cover based on the available time each day and number of lessons in each chapter. Teachers also believed they needed to slow down because the reading material was too advanced and teachers needed more time to support student needs. However, as they year progressed, teachers became more comfortable with the pacing of their instruction, as evidenced in the weekly implementation logs.

Material Perceptions

During fall and spring interviews, teachers offered feedback on their perceptions of different program components. Overall, teachers believed the labs and experiments offered by the program were easy to use and helped students to acquire content knowledge. Teachers also found the hands-on learning component to be vital in helping students engage with content at a deeper level. One teacher described how students responded to the activities.

TEACHER QUOTE:
They [students] are so pumped about doing the hands-on activities. The grade level students seem to be recalling more and understanding more of what we are trying to teach. [Grade 4 Interactive Science teacher, Fall Interview]

During fall and spring interviews, teachers also commented on the benefits of having students write in their science textbooks. Teachers thought the write-in components helped students to process the information at a deeper level and to build comprehension. The text also allowed teachers to avoid extra copying and to quickly assess student understanding. Ultimately, teachers believed the write-in text helped teachers to integrate literacy into the science block.

TEACHER QUOTE:
I have had some of the kids go home and the parents come back and love the fact that they can see the kids have underlined in it or drawn a map. I think it's a great, great resource for the kids and I can see the kids are growing as writers. Because they know if there is a sentence they need to write, they know they need to write in complete sentences. It's making them grow, it really is. [Grade 4 Interactive Science teacher, Spring Interview]

In some cases, teachers experienced difficulty because the write-in component was less engaging for students compared to labs, particularly for those students at lower ability levels.

Additionally, during interviews, several teachers mentioned that the chapter assessments were too difficult for students and wanted more basic or less abstract questions. A few teachers wanted additional open-ended questions and opportunities for students to apply knowledge. Overall, teachers thought the lesson checks during the lessons provided a good review and quick assessment.

Perceptions of Student Learning and Engagement

Across reporting weeks, Interactive Science teachers reported that the pace of their instruction allowed them adequate time to *somewhat meet* (51%) or *meet* (45%) student needs. In 4% of logs teachers indicated that they were not able to meet student needs.

Additionally, Interactive Science teachers rated the adequacy of the materials in meeting the needs of different student groups on a 5-point scale ranging from 5, *very adequate*, to 1, *very inadequate*. Overall, teachers believed the materials were *adequate* or *very adequate* for above-level students and *adequate* for on-level students. Across logs, teachers believed the materials were *somewhat adequate* or *adequate* for English Language Learner (ELL) students and *somewhat adequate* for below-level students (Figure 5).

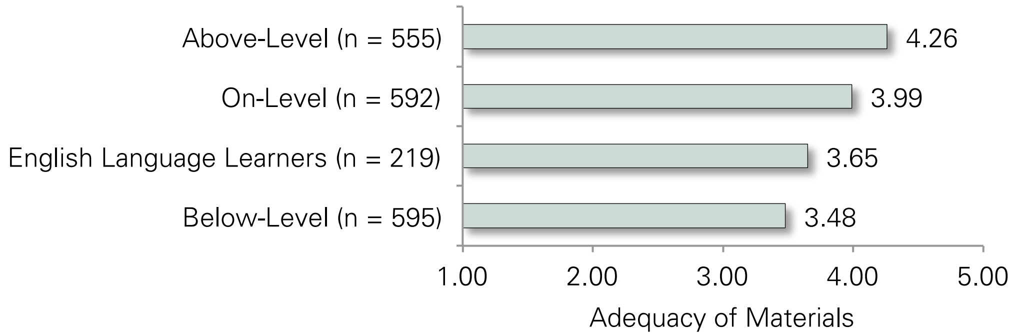

Figure 5. Teacher perceptions of adequacy of Interactive Science materials in meeting student needs across reporting weeks

During fall and spring interviews, evaluators asked teachers about the capacity of the Interactive Science program to meet student needs. Overall, teachers thought the program worked well for on-level and above-level students, with the content, leveled readers, and higher-level thinking questions supporting these students. Above-level students, they reported, were able to move at a faster pace compared to other students. Teachers who used the program with ELL students found it to be helpful and commented on the usefulness of vocabulary cards and leveled readers. For below-level students, teachers thought the content and reading was too advanced and said they often needed to make modifications such as moving at a slower pace or grouping below-level students with higher ability-level groups. Teachers thought the leveled readers, vocabulary cards, pictures, and activities all helped below-level readers to engage with the content.

Overall, teachers saw connections to reading, math, and social studies throughout the Interactive Science lessons. Teachers frequently mentioned connections to English Language Arts within the program, such as the graphic organizers, underlining, and writing components.

TEACHER QUOTES:

You could almost use this for your reading program – and that's really good – especially now with the Common Core. Everything is done through literacy and informational text. [Grade 5 Interactive Science teacher, Fall Interview]

I love how it just bounces around and hits all the subject areas. And it's a good connection for the kids because we've always told them that just because we teach you reading, it's not done in isolation when we do reading, same thing with math. [Grade 4 Interactive Science teacher, Spring Interview]

Teachers offered weekly feedback on their perceptions of how much students learned about lesson objectives, vocabulary, the essential question, and science inquiry. On a 5-point scale, teachers rated the level of student learning ranging from 5, *a great deal*, to 1, *almost nothing*. Across all reporting logs, teachers believed that students learned *much* about lesson objectives, the essential question, academic vocabulary, and science inquiry (Figure 6).

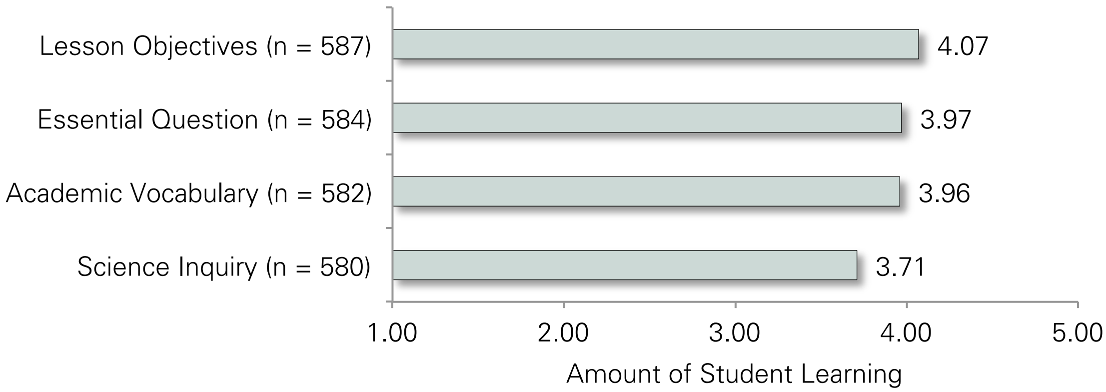

Figure 6. Perceptions of student learning across reporting weeks

During fall and spring interviews, teachers offered feedback on program impacts related to student reading skills and content knowledge. Overall, teachers thought the program supported reading skills and mentioned seeing improvements in student comprehension and vocabulary. As the year progressed, teachers observed students making connections to earlier chapters and other topic areas. In the interviews, teachers mentioned the benefits of inquiry components within the program, commenting that students asked more questions and showed more hands-on engagement with science content.

TEACHER QUOTES:
They're connecting more. They're getting it more. It's their science now, not my science. [Grade 4 Interactive Science teacher, Fall Interview]

I think it's [the program] had a positive impact on them. They're enjoying the concepts that they're learning about. And I think that the way the lessons are laid out and the questions in there—it's causing them to go deeper, instead of just 'across.' They have to really think further or higher and wider as opposed to just going straight through the chapter. [Grade 5 Interactive Science teacher, Spring Interview]

In their weekly logs, teachers reported on student engagement levels during Interactive Science activities, and in their final logs, teachers reported on student engagement during Interactive Science digital learning.[3] Overall, teachers believed students showed high

[3] High engagement: Students stayed on task during science [digital/online] instruction and enjoyed participating in the science and inquiry activities digital/online components in the program. Students showed interest in the Savvas *Interactive Science* digital/online materials and seemed to love science. Students made positive comments about the digital/online materials and regularly asked questions. Students often talked to each other about the materials and regularly asked questions about the science content or inquiry process. Students showed great interest and ownership in their write-in texts.
Average Engagement: Students stayed on task during digital/online instruction and participated in the required science and inquiry activities. They showed some interest in the digital/online materials and seemed to enjoy science. Students made some positive comments about the Savvas *Interactive Science* materials. They sometimes discussed the content with each other. They used their write-in texts as expected.
Low Engagement: Students had difficulty staying on task and participating in the required science activities. They showed very little interest in the materials and did not seem to enjoy science. They sometimes seemed frustrated by the activities. Students made few or no positive comments about the Savvas *Interactive Science* materials.

engagement in Interactive Science lessons and digital learning (Table 7). In classroom observations, Savvas research team members noted that students displayed the highest levels of engagement during hands-on activities and labs.

Table 7. Teachers' estimations of student engagement levels in Interactive Science

	Percentage of Students Engaged in Interactive Science Classroom Lessons	Percentage of Students Engaged in Interactive Science Digital/Online Components
High Engagement	62.48	67.13
Average Engagement	27.50	22.47
Low Engagement	10.41	10.40

Note. In each log, student engagement levels could only add to 100%, but because of the rounding of calculations over multiple weekly logs, the percentages do not add to 100.

In fall and spring interviews, teachers commented on program impacts on student engagement and science self-efficacy. Teachers reported that students found the hands-on activities to be exciting and engaging, and said these activities helped students to visualize concepts, gain a deeper understanding of material, and learn science by doing science. Additionally, most teachers believed the program positively impacted student self-efficacy. Students showed more confidence in their abilities over the course of the year and learned that making mistakes is part of the scientific process.

TEACHER QUOTES:
I think it [Interactive Science] increases their engagement. It brings it to life for them. It gives them an experience with the concepts—not just reading about it. It gives them their own personal experience with what we're talking about and it increases their ability to remember what we're talking about and understand the concepts. [Grade 5 Interactive Science teacher, Spring Interview]

My students gained much confidence as the year continued. My lower level students were helped by the online and visuals. My higher level students loved everything! They often read the chapters that we did not get to for fun. [Grade 5 Interactive Science teacher, Spring Interview]

In their spring attitude surveys, students answered an open-ended question concerning what they liked most about Interactive Science. Students had the opportunity to both draw (Figure 7) and write a response. Students' top three categories of interest were experiments (n = 273), science content (n = 140), and technology (n = 73). Students liked the different science experiments and activities; they enjoyed specific science content such as lessons on the human body, space, and animals; and they appreciated the program's science videos and online resources.

STUDENT QUOTES:
I like Interactive Science because we do fun activities and learn many new important and interesting things.

I like it [Interactive Science] because its hands on, not hands off.

I like the videos because it makes me understand more about what I am learning.

Figure 7. Student drawings illustrating what they enjoyed about Interactive Science (left: experiments, right: content related to animals)

Overall Perceptions

In their final weekly logs, eighteen teachers shared how the Interactive *Science* program compares to other science programs or materials they have used. The majority of teachers said the Interactive Science program compared favorably (n = 11). Teachers said they found Interactive Science to be more comprehensive, organized, accessible, and hands-on compared to previous science programs.

> **TEACHER QUOTE:**
> *Other science programs cannot be compared to this program. This program is structured and very effective. It measures up to English language arts and science. [Grade 5 Interactive Science teacher, Final Implementation log]*

Two teachers evidenced mixed feelings in their comparisons between Interactive Science and other programs. One teacher found some of the test questions and lessons to be difficult or lengthy, but enjoyed the MyScience online component, and concluded that the program would be improved with more flexibility in implementation (e.g., being able to choose chapters or components to address). Another thought the program had excellent components, but took more time than allotted by the science period.

Evaluators asked teachers what aspects of the Interactive Science program they enjoyed using with their students. Overall, most teachers enjoyed using the write-in textbook (n = 7), experiments and other activities (n = 6), and the videos (n = 4). Teachers valued the hands-on and interactive components (n = 4) and engaging materials (n = 3).

The final log asked teachers for their thoughts on what they would change if they could modify the program. Six teachers found components of the program to be too difficult for students, with five teachers commenting that the reading level of the text was often too advanced. Several teachers (n = 4) wanted more depth, additional details for the book activities, more explanations in the text, and extra pictures and videos for each lesson. Two teachers would not modify the program and found the Interactive Science program met all of their teaching needs.

Comparison Teacher Implementation

Comparison teachers completed a one-time log in the spring of 2012, providing information on material use and program perceptions. Overall, comparison teachers reported using their program an average of 4.13 days per week and spending 48.91 minutes per instructional period on science. As a result, comparison teachers spent equitable amounts of time in science instruction compared to Interactive Science teachers. In planning and preparing for their weekly lessons, comparison teachers spent an average of 74.35 minutes.

Most teachers (87%) reported the need to supplement their science curriculum. Comparison teachers used the following supplements: websites (*n* = 9), videos (*n* = 6), teacher-made materials (*n* = 5), and other curriculum resources (*n* = 3).

Material Use

Comparison teachers reported using a wide variety of materials with their students. Specifically, comparison teachers used their curriculum's teacher's edition and student text most frequently (Figure 8).

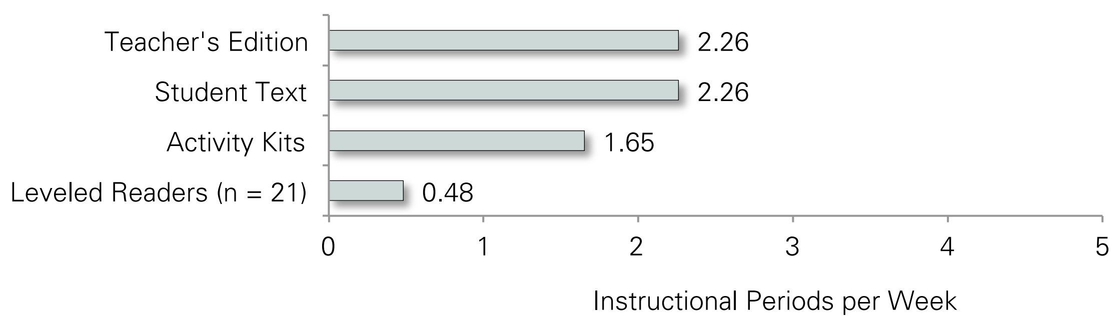

Figure 8. Comparison teachers' days per week using science materials (n = 23 teachers)

In comparison classrooms, 74% of teachers used science inquiry in their lessons, including experiments and labs (*n* = 7), investigation activities (*n* = 7), guided inquiry (*n* = 6), observations (*n* = 3), and the scientific method (*n* = 3). Comparison teachers who used science inquiry spent an average of two instructional periods per week on these activities.

Comparison teachers reported assessing their students in science regularly. Thirty-nine percent assessed students daily, 39% assessed weekly, and 22% assessed students on a monthly basis.

Program Perceptions

Comparison teachers offered feedback on how they perceived their existing science curriculum in terms of implementation, ability to meet student needs, student engagement and overall perceptions.

Implementation Perceptions

Overall, 65% of comparison teachers believed it was *easy* to implement their science curriculum, while 30% found it *difficult* and 4 percent found it *very easy*. When it came to planning and preparing lessons, 83% thought it was *easy* and 17% thought it was *difficult*. Comparison teachers also indicated their comfort level in using their current science program and activities (Figure 9). Overall, 77% of comparison teachers reported being *comfortable* or *very comfortable* with their program.

Comparison teachers commented on the amount of material offered by their program and pacing of their instruction. Overall, 48% of comparison teachers thought the amount of material was *just right* compared to 35% who thought there was *not enough* and 17% who thought there was *too much to cover*. Similarly, 82% of comparison teachers thought their program allowed them to move at a *reasonable pace*, in contrast to 9% who moved at a *slow pace*, and 9% who moved at a *fast pace*.

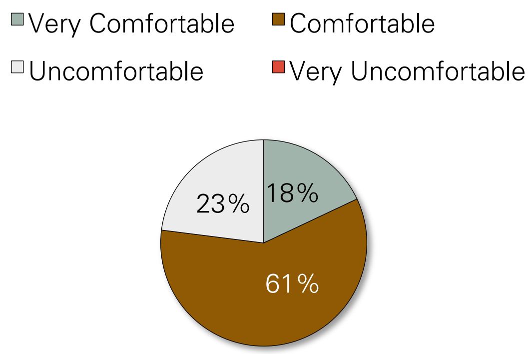

Figure 9. Comparison teachers' comfort level with their science curriculum (n = 22)

During spring interviews, comparison teachers offered feedback on their perceptions of the ability of their current science program to support teachers and facilitate use. Across the different programs used (i.e., FOSS, Harcourt Science, homegrown) teachers commented that they needed to supplement their program with additional resources and materials. Teachers who used FOSS believed the program only improved their background knowledge to an extent and reported the need to do their own research to understand the teaching content.

> **TEACHER QUOTE:**
> ***The background information is presented briefly at the beginning of the unit. It doesn't answer all of the questions that I have and I often go to the Internet for help. [Grade 4 comparison teacher, Spring Interview]***

Overall, teachers who used FOSS found the activity kits to be valuable aids to their science instruction, as they offered real-world examples, hands-on content, and were typically complete. Teachers who used Harcourt Science found benefit from the labs, teacher's manual, and textbooks. Teachers also commented on shortcomings of their programs. Some FOSS teachers mentioned the time required to prepare materials. Other FOSS teachers expressed the need for a student book and more materials with differentiated resources. Teachers who used Harcourt Science mentioned issues with not having materials for labs, concern over the text being too difficult for students, or a lack of alignment between the program and new standards.

Perceptions of Student Learning and Engagement

A total of 48% of teachers believed the pace of their instruction allowed for adequate time to meet the needs of all students, and 39% thought the pacing somewhat allowed them address needs. In contrast, 13% of teachers thought the pacing did not allow them adequate time to meet student needs.

Additionally, comparison teachers commented on the adequacy of their current science materials in meeting the needs of various student groups. On a 5-point scale, teachers rated the adequacy of the materials ranging from 5, *very adequate*, to 1, *very inadequate*. Comparison teachers reported that their current science curriculum was *somewhat adequate* for on-level and above-level students, whereas it was *inadequate* for below-level students and English language learners (Figure 10). A comparison of means across Interactive Science and comparison conditions, suggests that Interactive Science teachers believed their curriculum materials were more adequate in meeting student needs than comparison group teachers. In their spring interviews, most comparison teachers mentioned a need to use personal resources to differentiate science materials for students. Overall, comparison teachers believed their programs met the needs of advanced students, but students at lower ability levels needed additional support.

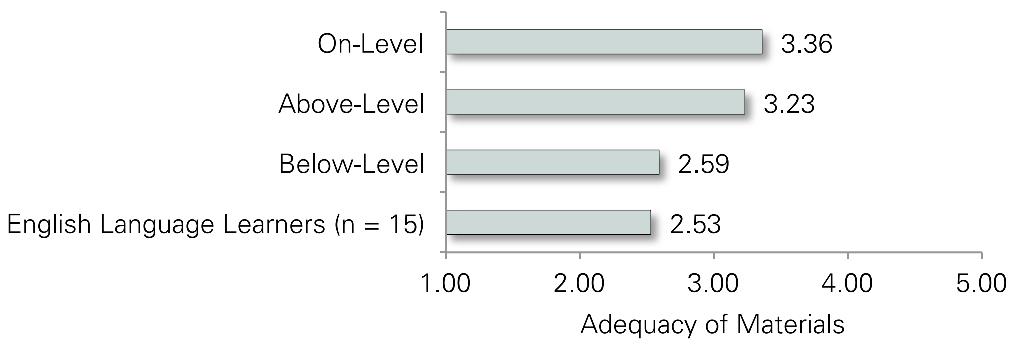

Figure 10. Adequacy of comparison curriculum materials in meeting student needs (n = 22 teachers)

On a 5-point scale, teachers rated the level of student learning ranging from 5, *a great deal*, to 1, *almost nothing*. Comparison teachers believed students learned *much* about science vocabulary, *some* or *much* about lesson objectives and *some* about science inquiry (Figure 11). A comparison of means across conditions suggests Interactive Science and comparison teachers had similar perceptions of student learning related to science vocabulary, lesson objectives and science inquiry. In the spring survey, comparison teachers also offered open-ended feedback on their perceptions of their materials' impact on students' understanding of lesson objectives and science inquiry. Specifically, eleven teachers believed that their program was lacking and did not completely address students' comprehension of objectives and inquiry. Four teachers explained that their program did not provide enough exposure to students, and four teachers referenced a lack of appropriate materials. In their spring interviews, teachers commented on program impacts related to science content knowledge and understanding. Most interviewed teachers commented on benefits, specifically that their programs provided real-world experiences in the classroom and that students perform well on assessments.

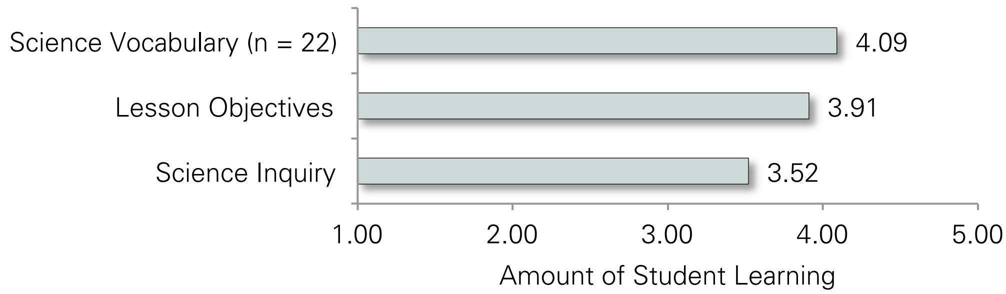

Figure 11. Comparison teacher perceptions of student learning (n = 23 teachers)

In the spring interviews, comparison teachers also commented on interdisciplinary connections in their program. FOSS teachers did not see interdisciplinary connections to other subject areas unless they specifically supplemented the materials. Harcourt Science teachers reported connections to literacy, specifically cause-effect relations, vocabulary and some writing.

> **TEACHER QUOTE [ON FOSS]:**
> *There isn't a book, so there is no reading. There is not much to offer cross-curricularly [sic]. [Grade 5 comparison teacher, Spring Interview]*

Similar to questions on student engagement for treatment teachers, comparison teachers rated overall levels of engagement.[4] Overall, comparison teachers believed most students evidenced high levels of engagement during science lessons (Table 8), which was similar to Interactive Science classrooms. In the spring survey, six teachers thought that their science program was engaging and enjoyable for students. In their spring interviews, comparison teachers noted that students had high levels of interest and engagement during science experiments and hands-on activities. Additionally, most teachers mentioned high levels of student confidence and self-efficacy in science.

Table 8. Teachers' estimations of student engagement levels in comparison classrooms

	Percentage of Students Engaged in Comparison Classroom Lessons
High Engagement	59.57
Average Engagement	30.43
Low Engagement	10.22

[4] High engagement: Students stay on task during science instruction and enjoy participating in the science activities in the program. Students show interest in the science materials and seem to love science. Students make positive comments about the materials. Students often talk to each other about the materials and regularly ask questions about the science content.
Average Engagement: Students stay on task and participate in the required science activities. They show some interest in the materials and seem to enjoy science. Students make some positive comments about the science materials. They sometimes discuss the content with each other.
Low Engagement: Students have difficulty staying on task and participating in the required science activities. They show very little interest in the materials and do not seem to enjoy science. They sometimes seem frustrated by the activities. Students make few or no positive comments about the science materials.

TEACHER QUOTE:
My students love science! They love learning about the world around them, and they can apply it to their own lives. [Grade 5 comparison teacher, Spring Interview]

Overall Perceptions

In the one-time spring survey, comparison teachers explained what aspects of their program they most enjoyed using with their students. The majority of teachers enjoyed using hands-on activities (n = 13) because these stimulated interest and focus and helped students understand the concepts. Teachers also enjoyed the experiments (n = 5), investigations (n = 4), kit materials (n = 3), and inquiry (n = 3). Teachers said these components were engaging, in-depth, hands-on, and easy to use, and they increased student understanding. Five teachers also enjoyed using the text with students for varied reasons including the pictures, ease of use, grade appropriate reading level, and appropriate text level for student understanding.

Additionally, comparison teachers described what they wished they could change about their program. The majority desired some change in their current materials (n = 11). Four teachers wanted to add a textbook or better reading materials to the FOSS program, while four others wanted improved or updated materials. Three teachers desired a more comprehensive program, with compatible text, activities, and materials. Three teachers believed their current science program needed no changes.

Interactive Science Versus Comparison Classrooms

Interactive Science and comparison classrooms shared some components. All participating classrooms included experiments, and some comparison classrooms, like Interactive Science classrooms, offered a student textbook. All teachers reported that they were comfortable with their programs and appreciated student hands-on activities. Teachers reported high levels of student engagement across both groups.

However, the Interactive Science program was distinguished from comparison classrooms by its unique assortment of components: Teacher's Guides, technological resources, interdisciplinary connections, write-in student textbooks, and inquiry activities. Overall, Interactive Science teachers expressed appreciation for the Teacher's Guide, which was easy to use and helped build background knowledge. This was in contrast to comparison group teachers, who frequently reported the need to look up additional information related to specific lessons.

Interactive Science also provided a wealth of digital activities and videos. In teacher and student comments, evaluators observed a fondness for the videos in particular, which helped to engage and support student learning of science concepts. Comparison classrooms did not have access to similar videos in their program and mentioned the need to supplement their programs with digital resources.

Interdisciplinary connections are embedded throughout the Interactive Science program. Students learned about reading, social studies and math within science instructional time and teachers appreciated these cross-curricular connections. Students started to build science vocabulary and reading skills, and to transfer learning to other content areas over the course of the year. Both treatment and comparison classrooms found the reading level of science textbooks to be too difficult for students, yet Interactive Science classrooms had several resources (e.g., leveled readers, vocabulary cards) to support differentiated instruction and Interactive Science teachers believed their materials were more adequate at meeting student needs.

The write-in textbook was unique to Interactive Science. Students could directly engage with the content on the page, teachers needed less time for copying materials and could also quickly assess students. Additionally, several comparison teachers who used FOSS desired a comprehensive student textbook to reinforce concepts. All of these benefits provided support in Interactive Science classrooms that was not directly available in comparison classrooms.

Student Performance and Science Attitude Results

To answer evaluation questions related to student science achievement and science attitudes, evaluators conducted descriptive and multilevel modeling analyses, and calculated effect sizes. This section presents information on Interactive Science students' achievement and attitudes, compares Interactive Science students' scores to comparison students' scores, and investigates differential performance within student subgroups.

Student Learning Gains

The following sections describe pretest and posttest student performance, and investigate whether gains in student achievement are statistically significant using multilevel modeling analyses.

Descriptive Statistics

Figure 12 suggests that Interactive Science and comparison students performed comparably on the SAT-10 Science test at pretest and posttest. Means, standard deviations and a breakdown of unadjusted scores by grade are available in Appendix G, Table G1.

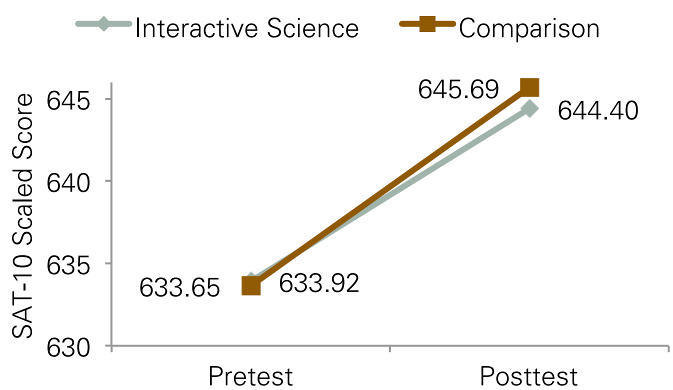

Figure 12. Interactive Science ($n = 596$) and comparison ($n = 511$) student mean unadjusted pretest and unadjusted posttest scaled scores

On average, fourth-grade students performed at the fifth-grade level in science at the beginning of the year and progressed to the sixth grade level by the end of the year. Students started the fifth grade at a sixth grade level on average and ended the year close to a seventh grade level (Figures 13–14).

The SAT-10 science test provided science cluster/subtest scores, indicating performance cut scores, but did not provide scale scores for clusters/subtests. Figures 15–20 suggest that, at the end of the year, Interactive Science and comparison students had similar cut scores on SAT-10 subtests in Life Science, Physical Science, Earth Science, Nature of Science, Basic Science Understanding and Science Thinking Skills.

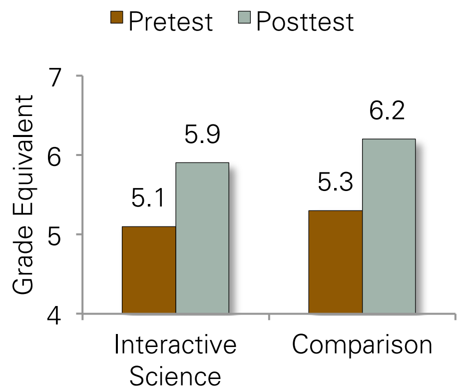

Figure 13. Fourth grade Interactive Science ($n = 283$) and comparison ($n = 254$) student unadjusted grade equivalents at pretest and posttest

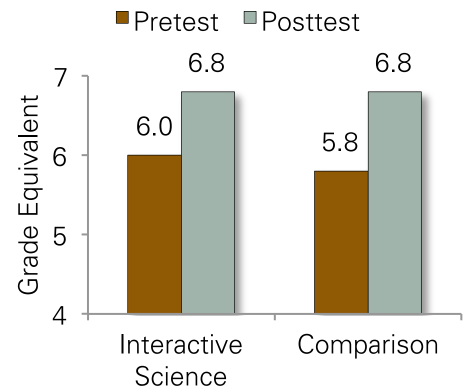

Figure 14. Fifth grade Interactive Science ($n = 313$) and comparison ($n = 257$) student unadjusted grade equivalents at pretest and posttest

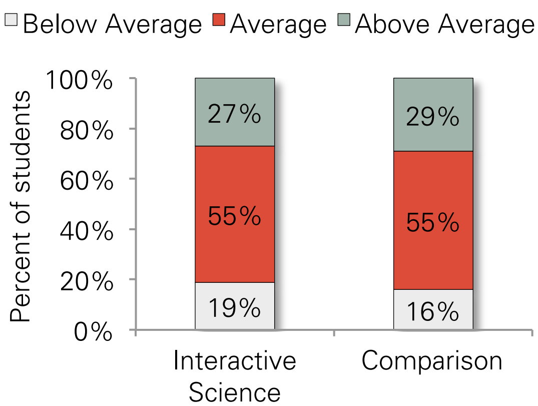

Figure 15. Interactive Science ($n = 596$) and comparison ($n = 511$) student performance on Life Science cluster at posttest

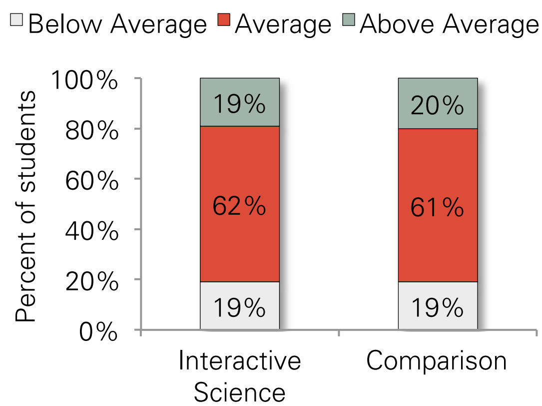

Figure 16. Interactive Science ($n = 596$) and comparison ($n = 511$) student performance on Physical Science cluster at posttest

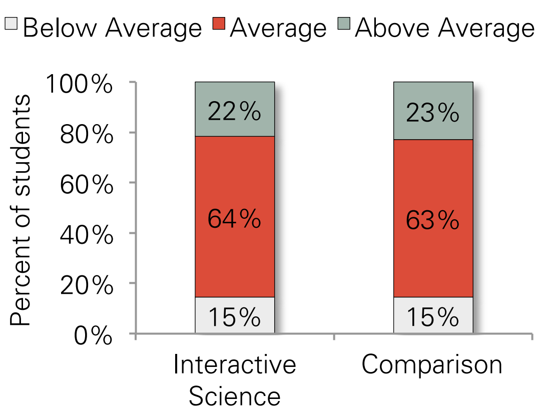

Figure 17. Interactive Science ($n = 596$) and comparison ($n = 511$) student performance on Earth Science cluster at posttest

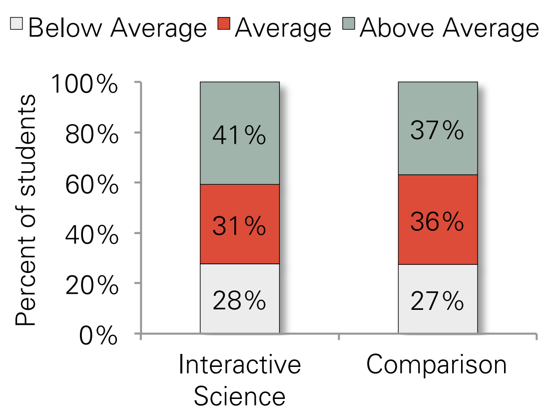

Figure 18. Interactive Science ($n = 596$) and comparison ($n = 511$) student performance on Nature of Science cluster at posttest

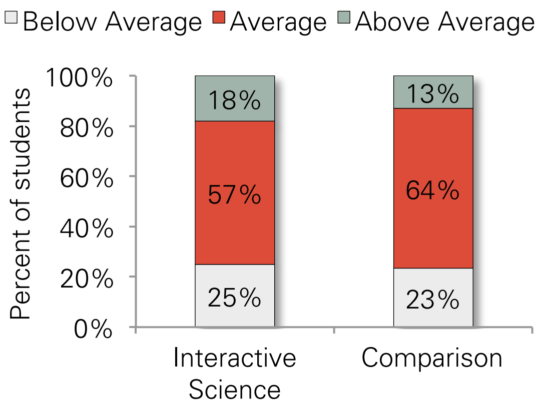

Figure 19. Interactive Science (n = 596) and comparison (n = 511) student performance on Basic Science Understanding cluster at posttest

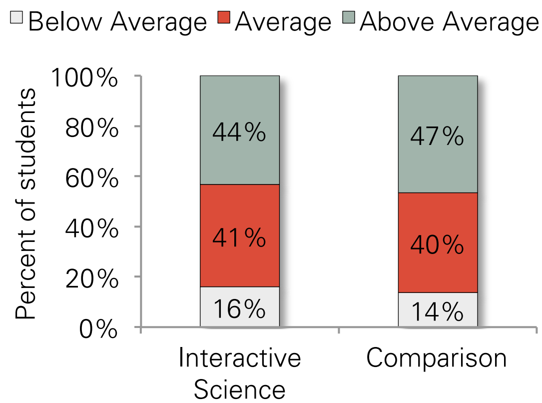

Figure 20. Interactive Science (n = 596) and comparison (n = 511) student performance on Science Thinking Skills cluster at posttest

To understand the magnitude of gains for treatment students, the impact of participating in the Interactive Science program and to determine statistical significance, evaluators conducted additional analyses using multilevel modeling.

Learning Gains Among Interactive Science Participants

The following section describes findings from multilevel modeling analyses, which were used to determine whether Interactive Science students made statistically significant gains and whether teacher implementation fidelity had a statistically significant relationship with learning gains.

KEY QUESTION:

Did students in the treatment group demonstrate significant gains in science achievement during the study period? Were there differential effects by implementation fidelity levels?

Evaluators used multilevel modeling, with students nested in classrooms, to understand how Interactive Science students performed over the course of the school year. At posttest, Interactive Science students evidenced a statistically significant gain in science achievement of approximately 12 points, translating to a medium effect size (Table 9).

Table 9. Treatment student gains on SAT-10 science scaled scores at posttest

Outcome Measure	Coefficient	Standard Error	*t*-Value	Approx. *df*	*p*-Value	Effect Size
Scaled Score Gain	11.64	2.18	5.34	32	.00*	0.33

Note. * Significant at the .05 level.

To understand whether Interactive Science student achievement differed by implementation fidelity levels, evaluators used multilevel modeling, with students nested in classrooms, to predict student SAT-10 achievement gains. The model included Interactive Science implementation fidelity scores and school indicator variables as covariates. Full results are displayed in Appendix G, Table G2. Although higher levels of teacher implementation fidelity related to greater gains on the SAT-10 for Interactive Science students, the relationship was not statistically significant (Figure 21). However, it is possible that the results might have achieved significance if the sample size had been larger.

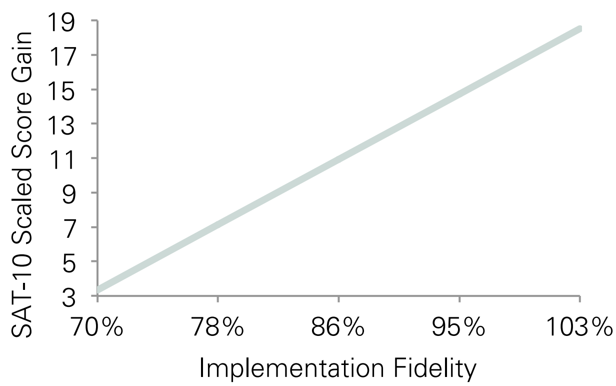

Figure 21. Non-significant relationship between Interactive Science implementation fidelity and student science achievement gains (observed range of implementation fidelity scores on x-axis)

Evaluators conducted additional exploratory multilevel modeling analyses to examine whether Interactive Science student achievement gains varied by average amount of time dedicated to science instruction each week or total days of science instruction during the school year. Details about these exploratory analyses and findings are located in Appendix H.

Comparison between Interactive Science and Comparison Group

To understand whether or not the Interactive Science program impacted student science achievement, evaluators conducted multilevel modeling analyses to compare overall student posttest performance by study condition and student posttest performance within subgroups.

KEY QUESTION:

How did the science achievement performance of students in the treatment group compare to that of students in the comparison group?

The multilevel model included study condition and two covariates: pretest student SAT-10 achievement and school. For complete results, see Appendix G, Table G3. Overall, Interactive Science and comparison students did not statistically significantly differ in posttest student achievement, indicating comparable levels of posttest science performance (Table 10 and Figure 22).

Table 10. Impact of Interactive Science on student posttest science achievement

Outcome Measure	Coefficient	Standard Error	*t*-Value	Approx. *df*	*p*-Value	Effect Size
Posttest Scaled Score	-1.70	2.36	-0.72	53	.47	-0.06

Note. * Significant at the .05 level.

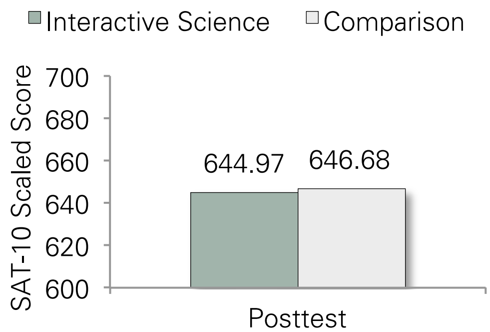

Figure 22. Adjusted posttest means representing the impact of Interactive Science on student science achievement

To explore whether there was a statistically significant program impact within different student subgroups, evaluators ran separate exploratory multilevel models by subgroup. These models, which nested students within classrooms, explored the impact of study condition, while controlling for pretest student SAT-10 science achievement and school. Evaluators ran subgroup analyses when the subgroup had at least 150 students. For this reason, evaluators did not conduct separate impact analyses for the following subgroups: ELL and Special Education. For complete results, see Appendix G, Table G4. Overall, there was not a statistically significant impact of the Interactive Science program within the following subgroups: Caucasian, African American, Hispanic, Free or Reduced Price Lunch (FRL) Eligible, or FRL Ineligible students. As a result, the Interactive Science program and comparison programs showed comparable effects on student science achievement within each student subgroup. Effect sizes are presented in Table 11.

Table 11. Effect sizes for the impact of Interactive Science by student subgroups

Subgroup	Effect Size
Caucasian	-0.13
African American	-0.04
Hispanic	0.03
FRL Eligible	-0.10
FRL Ineligible	-0.08

Note. * Significant at the .05 level.

Science Attitudes

This section describes student changes in science attitudes from pretest to posttest, and discusses the impact of Interactive Science on posttest science attitudes.

Descriptive Results

Figure 23 suggests overall science attitudes were comparable across groups at pretest and posttest. Evaluators also examined pretest and posttest attitude survey means by item, with means suggesting comparable attitudes across conditions. Interactive Science and comparison overall means and means by item are located in Appendix G, Tables G5–G8.

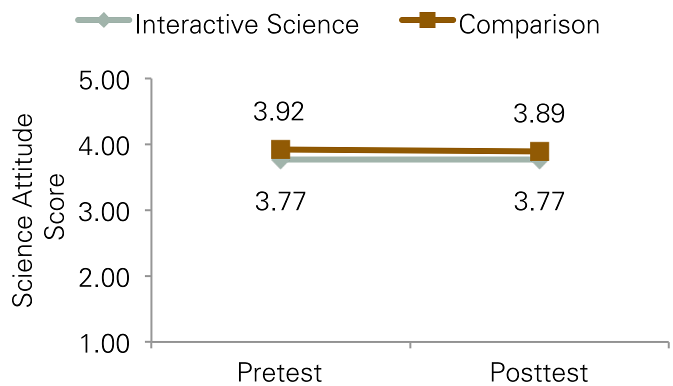

Figure 23. Interactive Science (n = 580) and comparison student (n = 483) unadjusted pretest and posttest average science attitude scores

Evaluators explored changes in student science interest (12 items) and science efficacy (6 items) over time, which were subscales within the 18-item student attitude survey (Figures 24–25). Overall, student interest appeared to decline slightly and efficacy scores appeared to increase slightly for both Interactive Science and comparison groups.

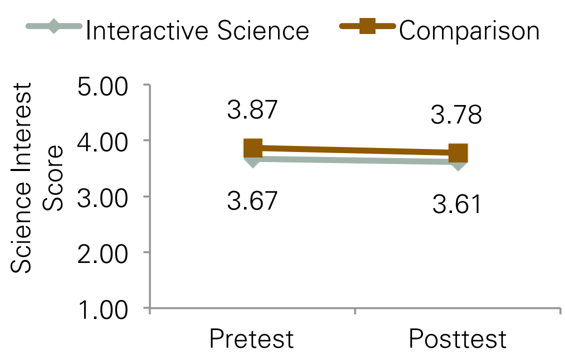

Figure 24. Interactive Science (n = 580) and comparison student (n = 483) unadjusted pretest and posttest science interest scores

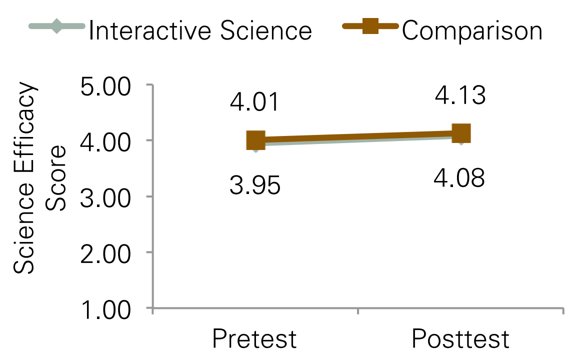

Figure 25. Interactive Science (n = 580) and comparison student (n = 483) unadjusted pretest and posttest science efficacy scores

Evaluators conducted additional analyses using multilevel modeling to understand the magnitude of science attitude gains, to estimate the impact of participating in the Interactive Science program, and to determine statistical significance.

Interactive Science Student Science Attitude Gains

KEY QUESTION:

Did students in the treatment group demonstrate significant gains in their interest and attitudes toward science during the study period?

To understand how Interactive Science students' science attitude scores changed over the course of the school year, evaluators used multilevel modeling with students nested in classrooms. Over the course of the year, there was no statistically significant change in Interactive Science students' attitude scores, indicating students maintained positive attitudes toward science from pretest to posttest (Table 12).

Table 12. Treatment student gains on science attitudes at posttest

Outcome Measure	Coefficient	Standard Error	*t*-Value	Approx. *df*	*p*-Value	Effect Size
Science Attitude Gain	0.01	0.04	0.31	32	.76	0.02

Note. * Significant at the .05 level.

Evaluators conducted exploratory analyses to understand how Interactive Science students' interest and efficacy scores changed over the course of the school year. Evaluators conducted multilevel model analyses with students nested in classrooms. There was no statistically significant change in science interest, but there was statistically significant increase in Interactive Science student self-efficacy scores, which translated to a small effect size (Table 13).

Table 13. Treatment student gains on science interest and science efficacy at posttest

Outcome Measure	Coefficient	Standard Error	*t*-Value	Approx. *df*	*p*-Value	Effect Size
Science Interest Gain	-0.05	0.05	-1.02	32	.32	-0.06
Science Efficacy Gain	0.13	0.04	3.46	32	.002*	0.20

Note. * Significant at the .05 level.

Comparison between Interactive Science and Comparison Group

KEY QUESTION:

How did changes in interest and attitudes toward science among students in the treatment group compare to those of students in the comparison group?

To understand whether or not the Interactive Science program impacted student science attitudes, evaluators conducted multilevel modeling analyses, with students nested in classrooms, to compare student posttest attitudes by study condition. The multilevel model included study condition and two covariates: pretest student science attitudes and school. For complete results, see Appendix G, Table G9. Overall, Interactive Science and comparison student scores did not statistically significantly differ at posttest (Table 14), indicating comparably positive levels of posttest science attitudes for both groups (Figure 26).

Table 14. Impact of Interactive Science on student posttest science attitudes

Outcome Measure	Coefficient	Standard Error	*t*-Value	Approx. *df*	*p*-Value	Effect Size
Posttest Science Attitude Score	-0.03	0.05	-0.74	53	.47	-0.05

Note. * Significant at the .05 level.

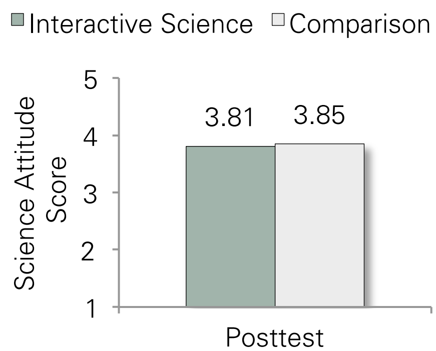

Figure 26. Adjusted means representing the impact of Interactive Science on student posttest science attitudes

Evaluators conducted additional exploratory analyses to examine the impact of Interactive Science on student science interest and efficacy scores. Complete results are displayed in Appendix G, Table G10. Overall, Interactive Science and comparison students did not statistically significantly differ in posttest science interest or science efficacy scores (Table 15). Both groups evidenced high and positive levels of science interest and efficacy (Figures 27 and 28).

Table 15. Impact of Interactive Science on student posttest science interest and science efficacy

Outcome Measure	Coefficient	Standard Error	*t*-Value	Approx. *df*	*p*-Value	Effect Size
Posttest Science Interest Score	-0.04	0.06	-0.69	53	.49	-0.05
Posttest Science Efficacy Score	-0.03	0.04	-0.84	53	.40	-0.05

Note. * Significant at the .05 level.

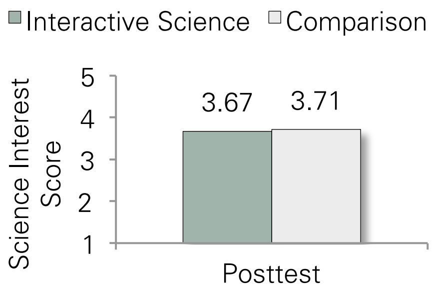

Figure 27. Adjusted means representing the impact of Interactive Science on student posttest science interest

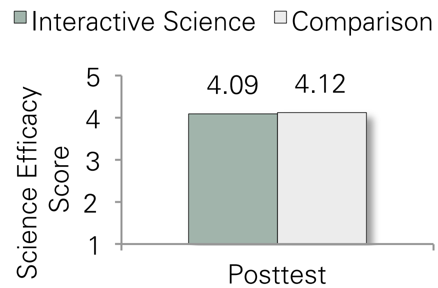

Figure 28. Adjusted means representing the impact of Interactive Science on student posttest science efficacy

Summary and Discussion

The purpose of this study was to evaluate the impact of Interactive Science on student science achievement and attitudes toward science, and facilitator implementation of the program, in grades 4 and 5. Evaluators conducted this randomized control trial (RCT) with 1,133 students in 61 classrooms within seven schools across the country. In the study, evaluators randomly assigned classrooms to use Interactive Science or to continue using their existing science program. Evaluators used a cluster randomized trial design, wherein students were nested in classrooms.

Overall, most classrooms implemented the curriculum according to implementation guidelines and with high fidelity. Fidelity values ranged from 70% to 102%, with an overall average of 89%. Total values corresponded to overall student exposure to the Interactive Science program and associated materials as reported in the weekly logs and observed during site visits. Site 3 experienced difficulty in achieving a minimum of two hours per week on science instruction, resulting in lower implementation fidelity scores. Overall, the majority of teachers implemented the program with high fidelity.

Interactive Science teachers had positive perceptions of the program and associated materials. In particular, teachers appreciated the design and depth of the Teacher's Guides. They saw benefits from using technology and hands-on experiments with their students, who evidenced high engagement during these activities. Teachers appreciated the write-in aspect of the student textbook and the interdisciplinary connections offered by the program. One common concern was that the student text reading level was too high for lower level students, and teachers often reported the need to differentiate their instruction to meet student needs.

Students showed high levels of engagement and interest in the Interactive Science program materials. In their final science attitude surveys, Interactive Science students expressed appreciation for the many different hands-on activities and experiments offered by the program. Students also showed a high level of interest in the various content and topic areas included within the program, in addition to the technological resources included with the program. One student wrote, "I like Interactive Science because we do fun activities and learn many new important and interesting things."

Over the course of the study, Interactive Science students evidenced statistically significant positive gains in science achievement (effect size = .33), corresponding to a moderate effect size. Although implementation fidelity was positively related to student science gains, it was not a statistically significant predictor, suggesting that greater exposure to the Interactive Science program might lead to greater achievement gains in a larger study sample.

At the end of the study, treatment and comparison group students had comparable science achievement scores (effect size = -0.06) with no statistically significant difference between groups. Additionally, evaluators explored the impact of Interactive Science within separate student subgroups. Within each subgroup (i.e., Caucasian, African American, Hispanic, FRL Eligible, FRL Ineligible), there were no statistically significant differences in the impact of the Interactive Science program (effect sizes= -0.13 to 0.03), suggesting that students in both the Interactive Science and comparison groups performed at comparable levels within these subgroups.

From the beginning to the end of the study, Interactive Science students did not see statistically significant gains in overall science attitudes (effect size = .02). In follow-up exploratory analyses, evaluators observed no statistically significant gains in science interest (effect size = -0.06), but did observe a statistically significant gain in science efficacy (effect size = 0.20). Students' science attitudes, interest, and efficacy were high at the beginning of the study, and there were no statistically significant decreases in these areas.

Evaluators compared treatment and comparison group attitudes toward science at posttest and found no statistically significant differences (effect size = -0.05), indicating that both groups showed comparably high levels of posttest science attitudes. Similarly, follow-up exploratory analyses found no statistically significant differences between Interactive Science and comparison students on science interest or science efficacy (effect sizes = -0.05). Both groups evidenced positive levels of science interest and efficacy at posttest.

The results showed that Interactive Science classrooms, who had only been using the program for one year, performed as well as comparison classrooms, who had been using high-quality science programs (i.e., FOSS, Harcourt Science) for several years. Teachers and students described the benefits of the Interactive Science program to include in-depth materials, engaging hands-on activities, technological resources, and connections to other content areas. Taken together, the results suggest that Interactive Science is an effective and high-quality science program enjoyed by teachers and students.

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Appendix A. Student Measures Reliability Information

Evaluators used the SAT-10 science subtest and a science attitude survey during the fall and spring. This appendix presents the reliability information for both assessments.

Stanford Achievement Test, Tenth Edition (SAT-10)

The SAT-10 is a standardized and norm-referenced diagnostic assessment. The SAT-10 40-item science subtest assesses student understanding in life science, physical science, earth, science, nature of science, models, constancy, form & function, basic understanding, and thinking skills. The estimated administration time is 25 minutes.

The science subtest has high reliability with coefficients ranging from 0.84 to 0.89 (Table A1).

Table A1. SAT-10 assessment reliability

					Kuder-Richardson 20 reliability	
Level	Grade Levels	Form	Subtest	Number of items	Fall	Spring
Primary 3	3.5-4.5	A	Science	40	0.89	0.86
Intermediate 1	4.5-5.5	A	Science	40	0.88	0.86
Intermediate 2	5.5-6.5	A	Science	40	0.84	0.84

Student Attitude survey

Haden (2011) developed the student science attitude survey during the pilot of the Interactive Science study. The survey asks students to rate their level of agreement in response to 18 statements that assess student attitudes and interest toward science. The questions are on a 5-point scale ranging from 5, *really agree*, to 1, *really disagree*. An example statement is, "Science is one of my favorite subjects in school." Twelve items comprised the interest subscale and six comprised the efficacy subscale.

Researchers examined the measure reliability using Cronbach's alpha (Table A2). Overall, the attitude survey questions together possessed high reliability with coefficients ranging from .77 to .90 on the subscales and .91 to .92 on the overall scale.

Table A2. Student attitude survey study reliability

	Fall	Spring
Attitude Survey Questions	.92	.91
Interest Subscale	.90	.90
Efficacy Subscale	.77	.77

Appendix B. Implementation Guidelines

RCT Implementation Guidelines

1. Interactive Science must be implemented a minimum of 2 hours per week.
2. The following charts outline required, recommended and optional components at the chapter- and lesson-levels for all grades.
3. There are more required components in Chapters 3 (both grades), 5 (grade 5), and 9 (grade 4). After becoming familiar with the instructional resources in the program, you will be able to choose which components best support the instructional needs for your classroom.

   In Chapter 3, you are required to complete both chapter-level inquiry activities, Try It! and Investigate It! You must minimally complete 2–3 lesson-level Explore It! inquiries.

   In Chapter 5 (grade 5) or 9 (grade 4), you are required to minimally complete three inquiries for the entire chapter. You can choose from Try It!, Explore It!, and Investigate It! inquiries.

All Grades Required Components – Student Edition (SE) unless otherwise marked
Chapter Opener (online—1 per chapter)
Try It! Inquiry (per chapter)
Envision It!
Content/Interactivities (questions throughout the lesson)
Got It?
Investigate It! Inquiry (per chapter)
Vocabulary Smart Cards
Benchmark Practice
Chapter Test (Teacher Edition (TE); may be modified)
Leveled Readers (Required for 1 chapter as differentiated instruction-as needed)

All Grades Recommended Components – SE unless otherwise marked
Explore It! Inquiry (Lesson level) (Note: Required for Chapter 3—see above)
STEM Activity Handbook: Design It! Activity (Recommended)

All Grades Optional Components – SE unless otherwise marked
Let's Read Science
My Planet Diary
Elaborate (TE Notes)
Do the Math?
Lightning/Go Green/At Home Labs
Lesson Check (TE)
Study Guide
Chapter Review
Feature (Career, NASA, Biography, Big World, Go Green)
Social Studies and Language Arts Connections Book
Readers Theatre
Language Central TE and SE: ELL/struggling reader support

Appendix C. School-Level Characteristics

Table C1. School-level characteristics

	Site 1						Site 2			Site 3		
	School A			School B			School C			School D		
	Treatment	Comparison	Total	Treatment	Comparison	Total	Treatment	Comparison	Total	Treatment	Comparison	Total
Fourth Grade												
Classrooms	2	1	3	2	1	3	4	4	8	1	1	2
Number of students	34	19	53	26	17	43	89	88	177	28	30	58
Fifth Grade												
Classrooms	2	1	3	2	1	3	4	4	8	1	1	2
Number of students	44	18	62	24	13	37	81	85	166	28	30	58
School Totals												
Classrooms	4	2	6	4	2	6	8	8	16	2	2	4
Number of students	78	37	115	50	30	80	170	173	343	56	60	116
Gender Among Participants												
Female	58.0%	44.0%	51.0%	48%	60%	52.5%	48.2%	53.2%	50.7%	48.2%	50.0%	49.1%
Male	42.0%	56.0%	49.0%	52%	40%	47.5%	51.8%	46.8%	49.3%	51.8%	50.0%	50.9%
Ethnicity Among Participants												
African American	62.3%	72.5%	67.4%	100.0%	100.0%	100%	0.0%	1.7%	0.9%	0.0%	0.0%	0.0%
Hispanic	2.5%	2.5%	2.5%	0.0%	0.0%	0.0%	2.4%	2.3%	2.3%	96.4%	98.3%	97.4%
Caucasian	30.8%	22.5%	26.6%	0.0%	0.0%	0.0%	90.6%	91.9%	91.3%	1.8%	0.0%	0.9%
Asian/Pacific Islander	4.3%	2.5%	3.4%	0.0%	0.0%	0.0%	7.1%	4.0%	5.5%	0.0%	1.7%	0.9%
Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.8%	0.0%	0.9%
Limited English Proficiency Among Participants												
LEP	1.3%	0.0%	0.6%	0.0%	0.0%	0%	0.0%	0.0%	0.0%	35.7%	31.7%	33.6%
Non-LEP	98.7%	100.0%	99.4%	100.0%	100.0%	100%	100%	100%	100%	64.3%	68.3%	66.4%
Special Education Among Participants												
Special Education	11.8%	13.5%	12.6%	28.3%	6.5%	17.4%	15.9%	7.5%	11.7%	7.1%	16.7%	12.1%
Non-Special Education	88.2%	86.5%	87.4%	71.7%	93.5%	82.6%	84.1%	92.5%	88.3%	92.9%	83.3%	87.9%
Free/Reduced Price Lunch Among Participants												
Free/Reduced Lunch	42.3%	44.5%	43.4%	-	-	-	2.4%	4.0%	3.2%	100.0%	100.0%	100%
Non-Free/Reduced Lunch	57.7%	55.5%	56.6%	-	-	-	97.6%	96.0%	96.8%	0.0%	0.0%	0.0%
Section 504 Among Participants												
Section 504	1.0%	0.0%	0.5%	4.8%	2.3%	3.5%	1.2%	0.0%	0.6%	0.0%	0.0%	0.0%
Non-Section 504	99.0%	100.0%	99.5%	95.2%	97.7%	96.5%	98.8%	100.0%	99.4%	100.0%	100.0%	100.0%

	Site 4 School E			Site 5 School F			Site 6 School G			STUDY TOTALS		
	Treatment	Comparison	Total	Treatment	Comparison	Total	Treatment	Comparison	Total	Treatment	Comparison	Total
Fourth Grade												
Classrooms	2	1	3	3	2	5	2	3	5	16	13	29
Number of students	15	5	20	41	66	107	32	57	89	290	257	547
Fifth Grade												
Classrooms	2	2	4	3	3	6	3	3	6	17	15	32
Number of students	17	7	24	63	69	132	55	52	107	318	268	586
School Totals												
Classrooms	4	3	7	6	5	11	5	6	11	33	28	61
Number of students	32	12	44	104	135	239	87	109	196	608	525	1133
Gender Among Participants												
Female	64.5%	66.7%	65.1%	45.9%	45.2%	45.6%	50.6%	53.2%	52.0%	49.2%	51.9%	49.5%
Male	35.5%	33.3%	34.9%	54.1%	54.8%	54.4%	49.4%	46.8%	48.0%	50.8%	48.1%	50.5%
Ethnicity Among Participants												
African American	68.8%	90.9%	74.4%	8.1%	10.6%	9.2%	31.0%	18.3%	24.0%	17.7%	13.0%	15.5%
Hispanic	21.9%	9.1%	18.6%	3.7%	6.7%	5.0%	4.6%	6.4%	5.6%	14.4%	16.4%	15.4%
Caucasian	0.0%	0.0%	0.0%	82.2%	77.9%	80.3%	63.2%	75.2%	69.9%	62.8%	67.7%	65.2%
Asian/Pacific Islander	6.2%	0.0%	4.7%	0.7%	0.0%	0.4%	1.1%	0.0%	0.5%	2.7%	1.7%	2.2%
Other	3.1%	0.0%	2.3%	5.2%	4.8%	5.0%	0.0%	0.0%	0.0%	2.3%	1.3%	1.8%
Limited English Proficiency Among Participants												
LEP	9.4%	0.0%	7.1%	0.0%	0.0%	0.0%	4.6%	4.6%	4.6%	5.6%	5.3%	5.4%
Non-LEP	90.6%	100.0%	92.9%	100.0%	100.0%	100.0%	95.4%	95.4%	95.4%	94.4%	94.7%	94.6%
Special Education Among Participants												
Special Education	3.1%	0.0%	2.4%	16.3%	11.5%	14.2%	10.3%	9.2%	9.7%	13.1%	9.9%	11.5%
Non-Special Education	96.9%	100.0%	97.6%	83.7%	88.5%	85.8%	89.7%	90.8%	90.3%	86.9%	90.1%	88.5%
Free/Reduced Price Lunch Among Participants												
Free/Reduced Lunch	0.0%	0.0%	0.0%	26.7%	32.7%	29.3%	81.6%	75.2%	78.1%	34.8%	40.1%	37.4%
Non-Free/Reduced Lunch	100.0%	100.0%	100.0%	73.3%	67.3%	70.7%	18.4%	24.8%	21.9%	65.2%	59.9%	62.6%
Section 504 Among Participants												
Section 504	0.0%	0.0%	0.0%	12.6%	4.8%	9.2%	0.0%	0.9%	0.5%	4.0%	1.3%	2.7%
Non-Section 504	100.0%	100.0%	100.0%	87.4%	95.2%	90.8%	100.0%	99.1%	99.5%	96.0%	98.7%	97.3%

Note. Site 1 provided classroom-level percentages that were aggregated up to the school level. Study totals for student demographics do not include Site 1. Finally, Site 4 had a small number of students participating in the study because of low response rates (26%) for student assent forms and parent consent forms.

Appendix D. CONSORT Flow Diagram for Interactive Science

Randomized (61 classrooms)

Pretest

Randomly assigned to Interactive Science (33 classrooms, 677 students)
- Students were absent for SAT-10 testing (-18 students)
- Students did not complete Student Attitude Survey (SAS) (-30 students)

Total Students with SAT-10 Pretest Data (659 students)
Total Students with SAS Pretest Data (647 students)

Randomly assigned to comparison group (28 classrooms, 571 students)
- Students were absent for SAT-10 testing (-15 students)
- Students did not complete Student Attitude Survey (SAS) (-43 students)

Total Students with SAT-10 Pretest Data (556 students)
Total Students with SAS Pretest Data (528 students)

Posttest

- Did not complete SAT-10 posttest assessment (-15 students)
- Did not complete SAS posttest survey (-18 students)

- Discontinued intervention before posttest assessments (moved) (-50 students)
- Dropped from study before posttest because student switched study conditions (-2 students)

Total Students with SAT-10 Posttest Data (610 students)
Total Students with SAS Posttest Data (607 students)

- Did not complete SAT-10 posttest assessment (-17 students)
- Did not complete SAS posttest survey (-21 students)

- Discontinued intervention before posttest assessments (moved) (-30 students)
- Dropped from study before posttest because student switched study conditions (-4 students)

Total Students with SAT-10 Posttest Data (520 students)
Total Students with SAS Posttest Data (516 students)

Attrition Sample

Beginning of study: 33 classrooms, 677 students
End of study: 33 classrooms, 621 students

8.3% sample attrition

Beginning of study: 28 classrooms, 571 students
End of study: 28 classrooms, 532 students

6.8% sample attrition

Analysis Sample

- Removed entire student because of outliers (-1 student)

Total Final Analysis Sample (33 classrooms, 608 students)

Total Final Analysis Sample (28 classrooms, 525 students)

Appendix E. Comparison Curriculum Content Analysis Table

Table E1. Comparison curriculum content analysis

Component	FOSS	Harcourt Science	Homegrown	Savvas Interactive Science
Grade Levels	K–8	K–6	K–6	K–8
Focus	Kit based science curriculum	Text based science curriculum	Various science content activities	Blended science curriculum
Program Components	Life Science Physical Science Earth Science Scientific Reasoning Technology	Life Science Physical Science Earth and Space Science Biology Chemistry Environmental Science	Life Science Physical Science Earth and Space Science Biology Chemistry Environmental Science	Life Science Physical Science Earth and Space Science Engineering and Technology Human and Body Systems
Materials (Note: Materials listed do not necessarily include all materials available from each publisher, especially items available from all four such as the Teacher's Edition and Student Edition, transparencies, black-line masters, graphic organizers.)	Equipment kits; living materials; teacher preparation videos; FOSS science stories *Practice:* Interactive CD-ROM; student lab notebooks. *ELL:* Spanish book edition. *Assessment:* Informal teacher observation and questioning (K); Teacher observation, anecdotal notes, student interviews and written work (1&2); Teacher observation, student performance-assessment tasks, end-of-module assessments, portfolio of accumulated work (3–6).	Curriculum books; experiment books; leveled readers; science kits; resource books. *Practice*: online reading support; vocabulary cards; flash cards. *ELL*: Instructional support. Scaffolded questions for students. Online student support. *Assessment*: Online assessment tools; teacher assessment book.	Activity pages; teacher webinars; activity worksheets; science videos. *Practice*: puzzles, interactive white board; online homework help. *Assessment*: Discovery Education provides assessment generators. Brain Pop offers pretests, posttests, and quizzes.	Student write-in text; Teacher's Guides; Material kits; STEM activity handbook (K–5); Multi-disciplinary activities (K–2); Virtual and hands-on activity labs; science library books; activity cards. *Practice*: at-home labs; virtual science tutor; online quizzes and leveled reading passages. *ELL*: ELL Handbook (3–5) *Assessment*: Progress monitoring; Test bank; "Got it?" student self-assessment; chapter test prep customized to state test formats.
Instructional Time	50 minutes per day; 9-12 weeks to teach each module	30–45 minutes per day	Varies	Varies; 60–135 minutes per lesson

Appendix F. Program Implementation Supporting Tables

The tables in this appendix provide additional information on Interactive Science and comparison teacher implementation.

Table F1. Interactive Science weekly log response rates by school

School	First Log Reporting Week	Last Log Reporting Week	Logs Expected Grade 4	Logs Expected Grade 5	Logs Received Grade 4	Logs Received Grade 5	Response Rate Grade 4	Response Rate Grade 5
School A (Site 1)	9/30/11	5/17/12	33	32	33	32	100%	100%
School B (Site 1)	9/30/11	5/17/12	27	36	25	36	93%	100%
School C (Site 2)	9/23/11	5/03/12	31	31	31	31	100%	100%
School D (Site 3)	9/23/11	5/03/12	28	29	28	29	100%	100%
School E (Site 4)	9/30/11	5/17/12	28	26	27	21	96%	81%
School F (Site 5)	9/16/11	5/03/12	33	33	33	32	100%	97%
School G (Site 6)	9/02/11	5/10/12	35	35	35	34	100%	97%

Note. Each site has one school with the exception of Site 1, which has two (Schools A and B).

Table F2. Fourth Grade Interactive Science chapters completed by school

	Chapters Completed										
School	1	2	3	4	5	6	7	8	9	10	Total
School A (Site 1)	◆	◆	◆	◆	◆				◆	◆	7
School B (Site 1)		◆	◆	◆					◆	◆	5
School C (Site 2)	◆	◆	◆	◆	◆				◆	◆	7
School D (Site 3)	◆	◆	◆	◆	◆					◆	6
School E (Site 4)	◆	◆	◆	◆	◆	◆			◆	◆	8
School F (Site 5)	◆		◆	◆			◆	◆	◆		6
School G (Site 6)	◆		◆	◆	◆		◆		◆	◆	7

Table F3. Fifth Grade Interactive Science chapters completed by school

	Chapters Completed												
School	1	2	3	4	5	6	7	8	9	10	11	12	Total
School A (Site 1)	◆		◆	◆	◆		◆	◆	◆	◆			8
School B (Site 1)	◆		◆		◆		◆	◆	◆		◆	◆	8
School C (Site 2)	◆	◆	◆		◆			◆	◆			◆	7
School D (Site 3)	◆		◆		◆								3
School E (Site 4)	◆	◆	◆	◆	◆	◆	◆	◆					8
School F (Site 5)	◆	◆	◆	◆	◆		◆						6
School G (Site 6)	◆		◆	◆	◆	◆	◆		◆		◆	◆	9

Table F4. Interactive Science log and observation implementation fidelity scores by school

	Grade 4		Grade 5	
School	Log	Observation	Log	Observation
School A (Site 1)	95%	68%	109%	86%
School B (Site 1)	83%	56%	92%	98%
School C (Site 2)	102%	86%	116%	88%
School D (Site 3)	87%	83%	68%	86%
School E (Site 4)	102%	86%	97%	89%
School F (Site 5)	96%	87%	86%	83%
School G (Site 6)	78%	90%	93%	77%

Table F5. Interactive Science overall implementation fidelity by school

School	Grade 4	Grade 5	Overall Fidelity
School A (Site 1)	81%	96%	89%
School B (Site 1)	70%	95%	83%
School C (Site 2)	94%	102%	98%
School D (Site 3)	85%	77%	81%
School E (Site 4)	94%	93%	94%
School F (Site 5)	91%	85%	88%
School G (Site 6)	84%	85%	85%

Appendix G. Supporting Tables for Student Achievement and Attitude Results

The tables in this appendix provide additional results from analyses examining student SAT-10 science achievement and science attitudes.

Table G1. SAT-10 Science subtest unadjusted and adjusted mean total scores for treatment and comparison students at pretest and posttest

Measures	Unadjusted Mean Pretest (*SD*)	Unadjusted Mean Posttest (*SD*)
4th Grade		
Treatment Scale Score (*n* = 283)	628.40 (34.50)	638.36 (32.54)
Comparison Scale Score (*n* = 254)	631.26 (34.07)	641.63 (31.37)
5th Grade		
Treatment Scale Score (*n* = 313)	638.92 (34.17)	649.86 (29.40)
Comparison Scale Score (*n* = 257)	636.01 (32.95)	649.71 (28.92)
Total		
Treatment Scale Score (*n* = 596)	633.92 (34.70)	644.40 (31.43)
Comparison Scale Score (*n* = 511)	633.65 (33.56)	645.69 (30.40)

Table G2. Additional results concerning Interactive Science student SAT-10 gains by teacher implementation fidelity

Measure	Coefficient	Standard Error	*t*-value	Approx. *df*	p-value
Classroom gain score	-28.94	28.89	-1.00	25	.33
Implementation Fidelity	46.09	32.19	1.43	25	.16
School B (vs. School A)	5.13	8.03	0.64	25	.53
School C (vs. School A)	-12.48	7.06	-1.77	25	.09
School D (vs. School A)	-6.51	9.17	-0.71	25	.48
School E (vs. School A)	16.12	8.36	1.93	25	.07
School F (vs. School A)	0.86	6.74	0.13	25	.90
School G (vs. School A)	-0.55	7.24	-0.08	25	.94

Table G3. Additional results concerning the impact of Interactive Science on student science achievement

Measure	Coefficient	Standard Error	*t*-value	Approx. *df*	*p*-value
Classroom posttest mean	646.59	1.76	367.77	53	.00
Interactive Science Condition (vs. comparison)	-1.70	2.36	-0.72	53	.47
School B (vs. School A)	-0.11	5.32	-0.02	53	.98
School C (vs. School A)	5.64	4.31	1.31	53	.20
School D (vs. School A)	-12.43	5.60	-2.22	53	.03
School E (vs. School A)	9.28	5.68	1.63	53	.11
School F (vs. School A)	4.24	4.51	0.94	53	.35
School G (vs. School A)	1.45	4.58	0.32	53	.75
Pretest Student Scale Score	0.58	0.02	28.27	1097	.00

Table G4. Additional results concerning the impact of Interactive Science on SAT-10 posttest scores by student subgroups

Measure	Coefficient	Standard Error	*t*-value	Approx. *df*	*p*-value
		Caucasian Only			
Classroom posttest mean	655.56	1.62	403.60	34	.00
Interactive Science Condition (vs. comparison)	-3.74	2.00	-1.87	34	.07
School B (vs. School A)	-51.42	28.88	-1.78	34	.08
School C (vs. School A)	-34.59	20.45	-1.69	34	.10
School D (vs. School A)	-49.35	28.82	-1.71	34	.10
School F (vs. School A)	-35.02	20.47	-1.71	34	.10
School G (vs. School A)	-37.42	20.50	-1.83	34	.08
Pretest Student Scale Score	0.58	0.03	22.75	627	.00
		African American Only			
Classroom posttest mean	630.10	4.43	142.17	32	.00
Interactive Science Condition (vs. comparison)	-0.97	6.10	-0.16	32	.88
School B (vs. School A)	-37.37	18.89	-1.98	32	.06
School C (vs. School A)	-33.76	23.00	-1.47	32	.15
School E (vs. School A)	-16.69	18.48	-0.90	32	.37
School F (vs. School A)	-30.60	18.58	-1.65	32	.11
School G (vs. School A)	-28.97	18.20	-1.59	32	.12
Pretest Student Scale Score	0.43	0.06	6.74	142	.00
		Hispanic Only			
Classroom posttest mean	635.22	3.46	183.52	26	.00
Interactive Science Condition (vs. comparison)	0.91	3.76	0.24	26	.81
School D (vs. School C)	-16.53	7.84	-2.11	26	.05
School E (vs. School C)	11.21	10.48	1.07	26	.30
School F (vs. School C)	4.16	9.23	0.45	26	.66
School G (vs. School C)	-10.31	9.73	-1.06	26	.30
Pretest Student Scale Score	0.45	0.06	7.88	140	.00
		FRL Eligible Only			
Classroom posttest mean	634.59	2.16	294.44	29	.00
Interactive Science Condition (vs. comparison)	-2.59	2.19	-1.18	29	.25
School D (vs. School C)	-4.86	6.68	-0.73	29	.47
School F (vs. School C)	6.69	6.80	0.98	29	.33
School G (vs. School C)	8.76	6.56	1.34	29	.19
Pretest Student Scale Score	0.54	0.04	14.84	337	.00
		FRL Ineligible Only			
Classroom posttest mean	656.27	2.35	279.77	40	.00
Interactive Science Condition (vs. comparison)	-2.16	3.21	-0.67	40	.51
School E (vs. School C)	3.49	5.28	0.66	40	.51
School F (vs. School C)	0.67	3.85	0.17	40	.86
School G (vs. School C)	-1.68	4.77	-0.35	40	.73
Pretest Student Scale Score	0.58	0.03	21.01	568	.00

Table G5. Science attitude unadjusted mean scores for treatment and comparison students at pretest and posttest

Measures	Unadjusted Mean Pretest (*SD*)	Unadjusted Mean Posttest (*SD*)
4th Grade		
Treatment Attitude Mean (*n* = 283)	3.83 (0.70)	3.81 (0.64)
Comparison Attitude Mean (*n* = 250)	3.91 (0.69)	3.86 (0.69)
5th Grade		
Treatment Attitude Mean (*n* = 297)	3.71 (0.69)	3.73 (0.64)
Comparison Attitude Mean (*n* = 233)	3.93 (0.58)	3.93 (0.55)
Total		
Treatment Attitude Mean (*n* = 580)	3.77 (0.70)	3.77 (0.64)
Comparison Attitude Mean (*n* = 483)	3.92 (0.64)	3.89 (0.63)

Table G6. Science interest and efficacy unadjusted mean scores for treatment and comparison students at pretest and posttest

Measures	Unadjusted Mean Pretest (*SD*)	Unadjusted Mean Posttest (*SD*)
Science Interest		
Treatment Mean (*n* = 580)	3.67 (0.80)	3.61 (0.76)
Comparison Mean (*n* = 483)	3.87 (0.71)	3.78 (0.73)
Science Efficacy		
Treatment Mean (*n* = 580)	3.95 (0.65)	4.08 (0.59)
Comparison Mean (*n* = 483)	4.01 (0.62)	4.13 (0.61)

Table G7. Interactive Science student attitude survey means by item (n = 580)

Item	Pretest Mean (*SD*)	Posttest Mean (*SD*)
1- Science is interesting to me.	4.01 (1.02)	3.92 (1.05)
2- I like to talk to my friends about science.	3.10 (1.22)	3.17 (1.21)
3- I am good at understanding science.*	3.84 (0.94)	3.86 (0.90)
4- Solving science problems is fun.	3.62 (1.21)	3.51 (1.21)
5- I am good at doing science experiments and activities.*	4.27 (0.90)	4.45 (0.77)
6- I understand how science is used in real life.*	3.76 (1.10)	4.01 (0.88)
7- I understand how scientists study the world.*	3.60 (1.09)	3.81 (1.00)
8- Doing science experiments and activities is fun.	4.59 (0.80)	4.63 (0.76)
9- Being a scientist would be an exciting job.	3.37 (1.34)	3.28 (1.32)
10- It is important for me to learn science.	4.28 (0.93)	4.21 (0.90)
11- I like to read about science.	3.27 (1.32)	3.22 (1.22)
12- I enjoy learning new things about science.	4.14 (1.02)	4.04 (0.98)
13- I like to know the answers to science questions.	4.12 (0.98)	4.09 (0.95)
14- I want to be a scientist when I grow up.	2.34 (1.33)	2.31 (1.25)
15- Science helps us to understand the world.*	4.30 (0.90)	4.33 (0.82)
16- I have a good feeling about science.	3.79 (1.11)	3.67 (1.08)
17- Science is one of my favorite subjects in school.	3.39 (1.41)	3.24 (1.36)
18- I usually understand what we are doing in science.*	3.91 (0.94)	3.97 (0.94)

Note. * designates efficacy subscale items. All other items pertain to student interest.

Table G8. Comparison student attitude survey means by item (n = 483)

Item	Pretest Mean (*SD*)	Posttest Mean (*SD*)
1- Science is interesting to me.	4.21 (0.84)	4.09 (0.95)
2- I like to talk to my friends about science.	3.35 (1.11)	3.28 (1.12)
3- I am good at understanding science.*	3.90 (0.91)	3.98 (0.92)
4- Solving science problems is fun.	3.94 (1.05)	3.74 (1.10)
5- I am good at doing science experiments and activities.*	4.29 (0.90)	4.42 (0.80)
6- I understand how science is used in real life.*	3.90 (0.93)	4.05 (0.90)
7- I understand how scientists study the world.*	3.60 (1.02)	3.81 (1.01)
8- Doing science experiments and activities is fun.	4.63 (0.77)	4.66 (0.74)
9- Being a scientist would be an exciting job.	3.69 (1.22)	3.36 (1.30)
10- It is important for me to learn science.	4.34 (0.85)	4.38 (0.83)
11- I like to read about science.	3.61 (1.17)	3.50 (1.12)
12- I enjoy learning new things about science.	4.28 (0.92)	4.27 (0.90)
13- I like to know the answers to science questions.	4.28 (0.88)	4.18 (1.00)
14- I want to be a scientist when I grow up.	2.56 (1.29)	2.34 (1.26)
15- Science helps us to understand the world.*	4.39 (0.80)	4.43 (0.76)
16- I have a good feeling about science.	3.92 (1.05)	3.87 (1.01)
17- Science is one of my favorite subjects in school.	3.62 (1.37)	3.64 (1.33)
18- I usually understand what we are doing in science.*	4.00 (0.93)	4.10 (0.89)

Note. * designates efficacy subscale items. All other items pertain to student interest.

Table G9. Additional results concerning the impact of Interactive Science on student science attitudes

Measure	Coefficient	Standard Error	*t*-value	Approx. *df*	*p*-value
Classroom posttest mean	3.85	0.04	109.48	53	.00
Interactive Science Condition (vs. comparison)	-0.03	0.05	-0.74	53	.47
School B (vs. School A)	0.04	0.11	0.36	53	.72
School C (vs. School A)	0.13	0.08	1.56	53	.13
School D (vs. School A)	-0.15	0.11	-1.40	53	.17
School E (vs. School A)	0.05	0.12	0.41	53	.68
School F (vs. School A)	0.02	0.09	0.17	53	.86
School G (vs. School A)	0.10	0.09	1.13	53	.26
Pretest Student Attitude Score	0.51	0.03	20.02	1054	.00

Table G10. Additional results concerning the impact of Interactive Science on student science interest and efficacy

Measure	Coefficient	Standard Error	*t*-value	Approx. *df*	*p*-value
		Science Interest			
Classroom posttest mean	3.71	0.04	88.17	53	.00
Interactive Science Condition (vs. comparison)	-0.04	0.06	-0.69	53	.49
School B (vs. School A)	0.03	0.13	0.20	53	.84
School C (vs. School A)	0.13	0.10	1.29	53	.20
School D (vs. School A)	-0.12	0.13	-0.93	53	.36
School E (vs. School A)	0.06	0.14	0.42	53	.68
School F (vs. School A)	-0.01	0.11	-0.06	53	.95
School G (vs. School A)	0.12	0.11	1.15	53	.25
Pretest Student Interest Score	0.52	0.03	19.43	1054	.00

Measure	Coefficient	Standard Error	*t*-value	Approx. *df*	*p*-value
		Science Efficacy			
Classroom posttest mean	4.12	0.03	141.44	53	.00
Interactive Science Condition (vs. comparison)	-0.03	0.04	-0.84	53	.40
School B (vs. School A)	0.05	0.09	0.55	53	.58
School C (vs. School A)	0.12	0.07	1.73	53	.09
School D (vs. School A)	-0.22	0.09	-2.60	53	.01
School E (vs. School A)	0.00	0.10	-0.03	53	.97
School F (vs. School A)	0.04	0.07	0.56	53	.58
School G (vs. School A)	0.02	0.07	0.33	53	.74
Pretest Student Efficacy Score	0.41	0.03	15.58	1054	.00

Appendix H. Additional Treatment-Only Analyses

Evaluators conducted additional treatment-only analyses to examine the relationships between two different Interactive Science program exposure variables (average amount of time dedicated to science instruction each week and total days teachers taught science over the course of the school year) and Interactive Science student gain scores.

Evaluators used multilevel modeling, with students nested in classrooms, to explore whether Interactive Science student achievement gains differed by average weekly time (in minutes) dedicated to Interactive Science instruction. The model included average weekly time spent in Interactive Science classrooms and school indicator variables as covariates. The relationship between average weekly time in Interactive Science instruction and gain scores was positive, but not statistically significant (p = .28) (Table H1) (Figure H1). These results should be interpreted with caution, because the analysis did not include comparison groups. As a result, it is unclear whether the relationship was because of more weekly time spent in Interactive Science or in science instruction.

Table H1. Additional results concerning Interactive Science student SAT-10 gains by average weekly time in Interactive Science

Measure	Coefficient	Standard Error	*t*-value	Approx. *df*	p-value
Classroom gain score	-9.25	19.66	-0.47	25	0.64
Average weekly time in Interactive Science	0.10	0.09	1.10	25	0.28
School B (vs. School A)	8.05	9.56	0.84	25	0.41
School C (vs. School A)	-2.48	8.39	-0.30	25	0.77
School D (vs. School A)	8.36	19.01	0.44	25	0.66
School E (vs. School A)	26.05	10.89	2.39	25	0.03
School F (vs. School A)	3.76	7.47	0.50	25	0.62
School G (vs. School A)	8.20	12.16	0.68	25	0.51

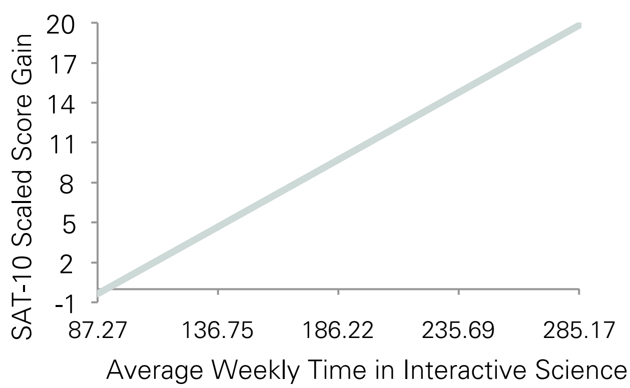

Figure H1. Non-significant relationship between average weekly time in Interactive Science (in minutes) and student science achievement gains (observed range of average weekly time in Interactive Science on x-axis)

To understand whether Interactive Science student achievement gains differed by total school days spent in Interactive Science, evaluators utilized multilevel modeling, with students nested in classrooms. The model included total school days spent in Interactive Science classrooms and school indicator variables as covariates. The relationship between total school days in Interactive Science and gain scores was statistically significant (p = .01), such that more days spent in Interactive Science instruction related to greater SAT-10 science gain scores (Table H2) (Figure H2). The current finding should be interpreted with caution. The analysis did not include comparison groups, so it is unclear whether the relationship was because of greater exposure to Interactive Science or to science instruction over the course of the school year.

Table H2. Additional results concerning Interactive Science student SAT-10 gains by total school days spent in Interactive Science

Measure	Coefficient	Standard Error	*t*-value	Approx. *df*	p-value
Classroom gain score	-33.74	15.80	-2.14	25	0.04
Total school days in Interactive Science	0.45	0.15	2.93	25	0.01
School B (vs. School A)	8.62	7.37	1.17	25	0.25
School C (vs. School A)	-16.72	6.44	-2.60	25	0.02
School D (vs. School A)	21.88	13.45	1.63	25	0.12
School E (vs. School A)	37.50	9.96	3.76	25	0.00
School F (vs. School A)	21.78	9.44	2.31	25	0.03
School G (vs. School A)	13.80	8.49	1.63	25	0.12

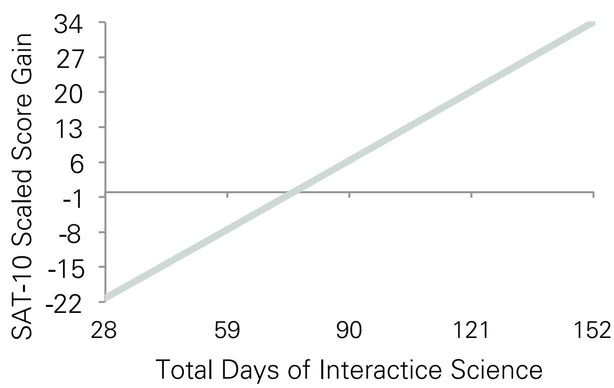

Figure H2. Significant relationship between total days spent in Interactive Science and student science achievement gains (observed range of total days spent in Interactive Science on x-axis)