

State Education & Environment Roundtable



A Brief Introduction
to Research that
Supports the
Academic
Benefits of
Environment-
Based Education

STATE EDUCATION AND ENVIRONMENT ROUNDTABLE

SEER is a cooperative endeavor of state education agencies working to improve student learning by integrating the environment into K-12 curricula and school reform efforts. SEER provides opportunities for them to exchange skills, experience, and resources that will help them enhance their respective programs. It also collects and disseminates information on existing school improvement programs to enable state agencies to build from a foundation of practical experience and knowledge.

The following agencies are members of SEER:

- California Department of Education
- Colorado Department of Education
- Florida Department of Education
- Georgia Department of Education
- Idaho Department of Education
- Iowa Department of Education
- Kentucky Environmental Education Council
- Maryland State Department of Education
- Massachusetts Department of Education
- Massachusetts Executive Office of Environmental Affairs
- Minnesota Department of Families, Children and Learning
- Minnesota Office of Environmental Assistance
- New Jersey Department of Education
- Ohio Department of Education
- Pennsylvania Department of Education
- South Carolina Department of Education
- Texas Education Agency
- Washington Office of the Superintendent of Public Instruction

The Pew Charitable Trusts sponsor SEER. The Council of Chief State School Officers administer SEER's funding.

To learn more about EIC:

The State Education and Environment Roundtable maintains a site on the Internet devoted to information on EIC-based learning: <http://www.seer.org>. The site contains a variety of links to participating state agencies, reports, reference materials, and other educational resources.

For further information please contact:

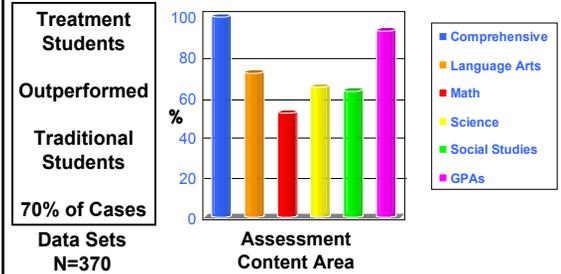
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Impacts on Student Learning

- better performance on standardized measures of academic achievement
- reduced discipline problems
- development of problem-solving
- increased engagement
- greater pride and ownership

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Summary of Comparative Analyses of Comprehensive and Discipline-specific Standardized Tests Scores and GPAs.



Cases in Point: Hotchkiss Elementary, Dallas

TAAS passing rates improved after implementing an environment-based curriculum.

- Reading scores showed an average 9% year-to-year gain for students in three different grades
- Writing scores for 4th graders in the 1996-97 class surpassed by 13% those of students in the 1995-96 class. Statewide, the average gain in writing during this period was only 1%

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Cases in Point: Dowling Elementary, Minneapolis

Math

Over a two-year period, median math comprehension scores on the California achievement test rose:

- 16 percentile points for low achievers
- 13 percentile points for middle-level achievers
- 7 percentile points for high-level achievers

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Cases in Point: Little Falls High, Little Falls

GPAs

- Traditional-track ninth graders averaged 2.42
- Ninth graders in the LINC-9 program averaged 2.95

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Survey Evidence of Improved Learning and School Work

Of teachers and administrators responding to the survey ___% reported that students':

- 93% > language arts learning improved
- 92% > mathematics learning improved
- 100% > science learning improved
- 96% > social studies learning improved

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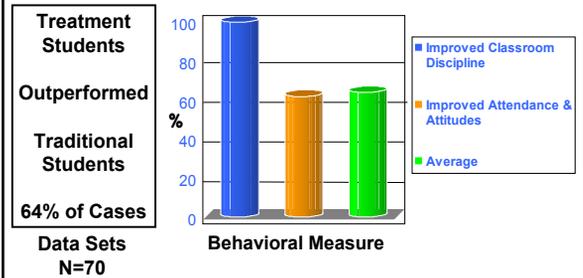
Why Is This Happening?



"It makes you want to learn because it's useful. I like the process of the learning. When I finish something I say, 'give me something else. Give me something to do.' I learn so quickly because I like it."
7th grade student
Radnor Middle School

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Summary of Comparative Analyses of Disciplinary Actions, Attendance and Student Attitudes



Cases in point: Tahoma High, Maple Valley

Discipline and Student Attitude Data

Indicated improved student behavior and attitudes.

- 8% fewer "discipline interactions" occurred among students in the Integrated Program than those in the traditional program
- Students in Integrated also scored 11 percentile points higher than traditional peers on the SAM (School Attitude Measure)

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Cases in point: Huntingdon Area Middle School Huntingdon, PA

Discipline problems decreased significantly. Analysis of 413 disciplinary referrals to the school office indicated that students in the STREAMS program represented :

- 17% of the 6th grade class but only
- 1% of the disciplinary referrals

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Cases in point: Hotchkiss Elementary School Dallas, TX

- 1st year 560 disciplinary referrals
- 2nd year 160 disciplinary referrals
- 3rd year 50 disciplinary referrals

Principal Judy Zimny views this as a strong indicator of "the level of student interest and the level of student engagement generated by this type of instruction yield very few behavior problems."

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Evidence of Improved Classroom Management

"They truly begin to discipline themselves. I think if you keep it so it's centered around the kids and they're involved, and they're actively doing things, then there's less time for them to think, 'I'm bored and I want to do something else.'"

Middle School Vice Principal

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Enhanced Thinking Skills

Students:

- are more active problem-solvers
- begin to act as independent decision-makers
- think critically and creatively
- ask thought-provoking questions
- understand connections and interrelationships
- transfer their learning to other aspects of their lives

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Evidence of Enhanced Thinking Skills



"The Cluster program didn't teach me all the 'facts' that every traditional biology, English, or history teacher thought I should know. What it did teach me was how to learn and how to process what I learned into my own ideas."

Recent Graduate
Lincoln High School

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Students Changing Views About Learning



"I know our son became interested in learning because of the variety of ways to learn." (parent of high school student)

"I seem to like doing experiments better than the sit-down, shut-up and write tests. I think I am a hands-on person." (middle school student)

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Probable Causes of Increased Engagement in Learning

Students:

- personal motivation to participate in learning increases
- are more interested in learning and enjoy it
- perceive increased significance and validity in their school experiences
- demonstrate more willingness and ability to stay on task
- stop asking, "Why are we studying this?"

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Summary of Results Observed for Teachers

Teachers:

- find themselves more enthusiastic and engaged in education than any prior time in their careers
- have increased opportunities to explore new subject matter and progress in their professional growth
- demonstrate greater willingness to pursue new teaching methods and apply them
- become change agents in their schools

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Summary of Results Observed for Teachers

Of teachers and administrators responding to the survey ___% reported teachers are:

- 95% more enthusiastic and engaged in teaching
- 89% undertaking more extra activities and projects

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Teacher Enthusiasm and Motivation

"I've never loved teaching so much. I've never been so excited about it. I feel so exhilarated and energized by it."

4th/5th Grade teacher
Open School



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Summary of Research Results

Students

- better performance on standardized measures of academic achievement
- reduced discipline
- development of problem-solving
- increased engagement
- greater pride and ownership

Teachers

- more enthusiastic and engaged
- greater willingness to pursue new teaching methods
- become change agents in their schools

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The EIC Model

Using the
Environment as an **I**ntegrating **C**ontext
for Learning

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EIC — Environment as an Integrating Context for Learning

EIC is an education model that employs natural and community surroundings as the context for learning while taking into account "best practices in education."

EIC-based learning is as a comprehensive framework for learning in all subject areas.

While students learn about the environment it is not EIC's primary purpose.

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SEER Developed The EIC Model

Based on:

- Its research, as reported in *Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning*;
- The knowledge and experience of SEER's staff in the United States and internationally;
- Contributions of representatives from SEER's original 12 state department of education; and,
- Other related educational research.

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The EIC Model Is a Nationally Recognized Approach to Education Reform

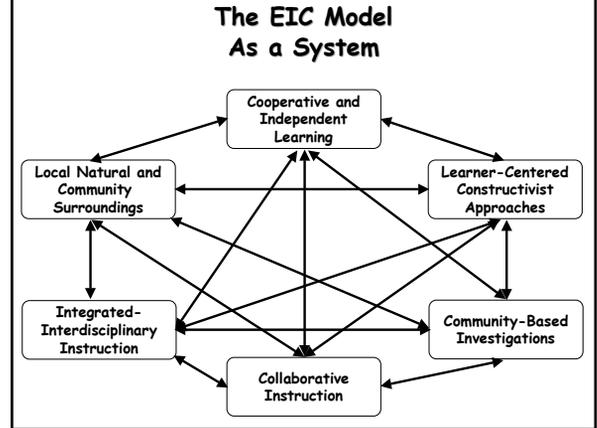
The EIC Model is:

- A system of specific, interconnected educational practices, that encompasses professional development and program evaluation.
- Endorsed by SEER's 16 member state departments of education.
- Recognized by the Education Commission of the States as a comprehensive school reform model.
- Copyrighted by SEER.

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The EIC Model Is a System that Interconnects Six Recognized Best Practices in Education

- ① Integrated-Interdisciplinary Instruction crossing traditional subject-matter boundaries
- ② Collaborative Instruction connecting teachers, students and the community in shared learning experiences
- ③ Community-Based Investigations offering hands-on and minds-on experiences relevant to students' lives
- ④ Learner-Centered, Constructivist Approaches building on students' interest, needs, knowledge and experience
- ⑤ Cooperative and Independent Learning promoting collaboration among students yet encouraging individual students to maximize their potential
- ⑥ Local Natural and Community Surroundings as the Context for instruction, learning and service



What Constitutes an EIC School

To implement The EIC Model, schools must be members of SEER's National Network of EIC Demonstration Schools. These schools must:

- Participate in SEER's EIC Implementation Seminars;
- Implement all of EIC's educational pedagogies;
- Employ SEER's Program Evaluation Framework; and,
- Maintain regular communication with SEER staff for needed Technical Support.

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EIC Implementation Institutes

SEER's professional development specialists train interdisciplinary teams of teachers, administrators and community partners. These teams learn to:

- Implement SEER's curriculum-mapping process;
- Work with students to design and conduct community-based investigations;
- Develop learner-centered, constructivist approaches; and,
- Identify local community and natural surroundings that can be effectively used as contexts for EIC-based learning.

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SEER's Program Evaluation Framework

SEER's Program Evaluation Framework is a CBAM-based approach that helps educators and evaluators to conduct formative and summative assessments of the EIC implementation process. The components are:

- Stages of Concern (SoC) (validated questionnaire);
- Levels of Use (LoU) (self-evaluation rubrics); and,
- Innovation Configuration Instruments (ICs) (interview and observation)

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Participants in SEER's EIC Implementation Institutes

EIC Implementation Institutes

- 1378 educators
- 458 schools

EIC School Demonstration Networks

State-based Demonstration School Networks:

- California (7 schools starting 2002)
- Florida (13 schools)
- Georgia (10 schools starting 2002)
- Iowa (8 schools starting 2002)
- Maryland (9 schools with CBF)
- Minnesota (12 schools - 10 more starting 2002)
- Massachusetts (12 schools starting 2002)
- New Jersey (10 schools)
- South Carolina (12 schools starting 2002)
- Texas (13 schools - 12 more starting 2002)
- Washington (1 CSRD school)

Environment as an Integrating Context

Your brain on traditional education

I think I'll drop out.

Why are we doing this?

I don't get it.

These worksheets are great! NOT !!



Your brain on EIC-based education

You know what I think? We're going to the river. YES, YES!!!

Aha! I see the connection. I

What does this mean to me?

This is neat stuff!

I get it! I get it!!

I can't wait to tell my Mom about this!



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