Programs & Practices

ENVIRONMENT AS AN INTEGRATING CONTEXT FOR LEARNING (EIC)

This review is not an endorsement by the Education Commission of the States, it is one of several reviews compiled to show the diversity of approaches schools are using to accomplish comprehensive reform.

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Environment As An Integrated Context For Learning (EIC)

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What makes this model unique?

Environment as the Integrating Context for Learning (EIC) was developed based on research conducted by the State Education and Environment Roundtable (SEER), a group made up of the top environmental education administrators from 12 participating state departments of education.

The Environment as the Integrating Context for Learning (EIC) model focuses on developing programs unique to each school and community. The model combines best practices into a comprehensive educational framework that simultaneously addresses content standards from multiple disciplines. EIC uses the school's natural and socio-cultural settings to engage students in schoolwork that they perceive as relevant to their daily lives, thus increasing their motivation for learning and academic achievement.

EIC's school and community settings may include any one or more of the following:

- Developed areas of school campuses, including playgrounds;
- Undeveloped school property, such as fields or woodlands;
- Off-site study areas, both natural habitats and community settings.

EIC students explore their local surroundings to discover issues of interest, design their own investigations and cooperate with teachers to assess their academic progress. The EIC model gives students a major role in designing their own learning, conducting in-depth research and applying subject matter skills and knowledge through service-learning projects that can significantly benefit their communities. In their environment-based studies, students rely on community, business, university and resource agency experts as mentors and sources of information.

How much will it cost?

Costs to implement EIC vary depending on school and district size and location. The following estimate provides a starting point for planning.

Costs average $3,000 per teacher in the first year, assuming participation of 15-20 teachers per school. The above estimates include:

- Eight to ten days of release time for participating teachers;
- Five days of professional development time provided by SEER staff;
- Fifteen days of ongoing technical assistance;
- Program development materials.

These cost estimates are related to implementation of the EIC Model as a comprehensive program for an individual school. These are not the costs associated with creating a State-based EIC Demonstration Network.

Costs decrease by approximately 25% in the second and third years of implementation.

What is the evidence that it works?

External Research and Evaluation

Four major studies have documented the educational efficacy of the EIC model. These studies have examined the implementation of EIC at a total of 66 schools [Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning (Lieberman and Hoody, 1998); California Student Assessment Project: The Effects of Environment-based Education on Student Achievement (Lieberman and Hoody, 2000); Environmental Education and the Sunshine State Standards Pre-Kindergarten through Grade Twelve (Abrams 1999); and, Environment-Based Education: A Report on its Usefulness in Creating High-Performing Schools and Students (Lozar-Glenn 2000).]

Lieberman and Hoody (1998) was the first study of schools using the EIC model. This three-year investigation indicated the following:

- ♦ better performance on standardized measures of academic achievement in reading, writing, math, social studies and science;
- ♦ reduced discipline and classroom management problems;
- ♦ development of problem-solving, critical thinking and decision-making skills
- ♦ increased engagement and enthusiasm for learning; and,
- ♦ demonstration of greater pride and ownership in student schoolwork.

The report also provided extensive case descriptions of schools implementing the EIC model using evidence gathered from 40 schools across the U.S. The data came from site visits, interviews, surveys, reviews of standardized test scores, GPAs, disciplinary referrals and attendance rates. The study included interviews of over 250 educators and 400 students from programs that had an average longevity of over seven years.

Although this study primarily was qualitative, quantitative data were also collected. Comparative analyses are based on a range of data types collected at 14 of the 40 study schools. Summaries of these data are presented on the next page in a table replicated from the 1998 research report.

Summary of Comparative Analyses of Comprehensive Standardized Test Scores and GPAs (20)

School Name	Effect of EIC	After Implementing EIC
Hollywood Elementary	1997 MSPAP Assessment	1997 composite scores for students in 4th grade were 27% higher than at other schools in their county on MSPAP (Maryland State Performance Assessment Program) and 43% higher than Maryland as a whole.
	1996 MSPAP Assessment	1996 composite scores for students in 4th grade were 16% higher than at other schools in their county on MSPAP and 30% higher than Maryland as a whole.
Open Charter Elementary	Stanford Nine Assessment	Scores of students in 4th/5th grade "Purple Cluster" (EIC) achieved an average growth of one full stanine (achievement increment) from their previous testing. Tracked 1996-97.
Jackson County Middle	KIRIS Assessment	Students in 7th and 8th grades registered a 10% average increase over their previous KIRIS (Kentucky Instructional Results Information System) scores. This moved the school to within 0.1 point of being a "Reward School." Tracked 1992-96.
Little Falls High	9th-Grade GPAs	9th graders in the EIC program averaged a 2.95 grade point average (GPA) compared to a 2.42 GPA for other 9th graders at Little Falls. Tracked 1995-96.
Tahoma High	9th-Grade GPAs	9th graders in the EIC program averaged a 3.2 GPA compared to a 2.6 GPA for other 9th graders at Tahoma. Tracked 1995-96.
	10th-Grade GPAs	10th graders in the EIC program averaged a 3.0 GPA compared to a 2.8 GPA for other 10th graders at Tahoma. Tracked 1995-96.
Valley High	KIRIS Assessment	Students in 11th and 12th grades "performed measurably better than their peers [at Valley] on both KIRIS and SATs": Terry Shinkle, Principal. Tracked 1994-96.
	SAT Scores	

In 1999, the California Department of Education commissioned a second study of the educational efficacy of EIC. Lieberman and Hoody (2000) examined eight pairs of EIC treatment and control schools/programs in California. Data from this study, combined with data from the first study, indicated that in most cases, students in EIC programs scored higher than their peers in traditional programs. Some of the results included higher scores on:

- 77% of all comparisons of standardized tests and GPAs;
- 80% of language arts assessments;
- 65% of mathematics assessments;
- 77% of social studies assessments; and,
- 67% of science assessments.

In addition to the observed benefits of the EIC model on academic achievement, the studies found that classroom discipline and attendance problems were reduced in 84% of the comparison cases.

Internal Research and Evaluation

See developer's Web site.

How will this model change my school?

The EIC model involves the entire instructional team (teachers, administrators, students and community members) in creating a shared vision, planning curriculum and delivering instruction. EIC also requires the creation of a local advisory committee reflecting the community's cultural, political and economic diversity. This committee also provides leadership in program design, planning and evaluation.

Collaborative instruction and team teaching are cornerstones of the EIC model. If a school is not using this form of teaching, they will need to reorganize so that teachers can engage in collaborative instruction.

The EIC model does not provide a one-size-fits all blueprint for whole school change. EIC does provide a set of instructional strategies, however, that can be implemented in different ways according to the unique needs and characteristics of the school and community. The strategies serve the following needs:

- Facilitates integrated, interdisciplinary instruction by providing a framework for meeting the content standards of multiple disciplines;
- Helps educators combine best practices into a comprehensive instructional program;
- Gives students a major role in designing their own learning, conducting in-depth research and applying subject matter skills and knowledge through service-learning projects benefiting their community;
- Engages students in learning relevant to their daily lives and futures by employing the local community and natural environments as the context for instruction; and,
- Fosters partnerships with parents and other community members concerning issues of teaching and learning.

The EIC model recommends interdisciplinary teams and integrated curriculum formats. Thus, consistent and regular allocation of planning time for teachers for at least two to three times weekly is necessary. These meetings provide time for teachers to evaluate student progress, resolve logistical issues, make team decisions and adjust team plans accordingly. Though teacher meetings must occur at least two-three times per week, each school develops its own approach to allocating team planning time that works within school constraints and meets the particular needs of its teachers and the school community. Schools should also have a well-designed plan of induction and training for when a team member or members must be replaced, as well as a defined strategy for continuous team-building efforts.

The EIC model values and makes use of the school and community context as a framework for interdisciplinary, experiential and collaborative learning. Thus, the schools are encouraged to involve individuals representing the full diversity of the community in mentoring programs, internships and service-learning opportunities for students. Both the school team and the advisory committee are urged to develop an ongoing effort to communicate program successes, by providing recognition of student and teacher accomplishments and opportunities to showcase and celebrate the program's successes within the broader community.

In addition, SEER's professional development team works with EIC schools to document and report on the success of the implementation effort through use of SEER's program evaluation rubrics, periodic on-site reviews, and ongoing analysis of student assessment data.

How will the developer help me?

SEER's professional development program is based on its research into the educational efficacy of the EIC model. The educational practices incorporated into the EIC model are based on over four years of research at both the state and national level. SEER staff provides school teams with a series of interactive seminars to give faculty, administration and community members the tools needed to:

- ♦ use the curriculum mapping process to create interdisciplinary instructional strategies;
- ♦ design inquiry-based learning that involves problem-solving and issues-based investigations;
- ♦ establish and work successfully in interdisciplinary teaching teams;
- ♦ develop learner-centered, constructivist instructional programs;
- ♦ identify community-based issues, topics that provide a real-world context for learning;
- ♦ incorporate classroom-based authentic assessment methods into daily practice; and,
- ♦ institute school-based program evaluation strategies.

Two professional development specialists from SEER conduct the initial EIC Implementation Seminar, which involves a majority of the school's staff, represented by interdisciplinary teams of three to four teachers each. Secondary school teams are comprised of representatives from at least three disciplines, and Elementary school teams include varied grades and/or specialties. Release days are necessary for the teaching teams to participate in further professional development and meet for ongoing, joint planning time throughout the school year. (In special situations, SEER provides professional development for a core of committed educators willing to become leaders as the efforts at their schools grow.)

SEER's professional development program uses state and local standards as the starting point for a curriculum mapping process through which educators design their own program of study that meet local priorities and objectives. In addition to helping educators achieve their standards-based objectives, this model helps them design a program of study that crosses traditional disciplinary boundaries. With this curriculum, students can interconnect knowledge and skills from a variety of subject areas to generate a comprehensive understanding of their community and environment.

During the first two-three years of implementation, SEER's technical support team participates with the faculty and administration in regular, on-site coaching sessions. This support includes: monthly or bi-monthly coaching visits; coordination with community partners and professional guidance of program coordinators as they develop in their role as program facilitators.

SEER offers "EIC Implementation Seminars" to help educators engage in recognized "best practices in education," and provides the documents and materials as listed in the "Supplies section." EIC also provides "Implementing and Strengthening an EIC Program in Your School," a guide that helps school teams evaluate their progress with implementing the EIC model. "Developing Leadership and Community Support for an EIC Program in Your School," is a guide that helps schools in their assessment of community participation and leadership in their instructional program.

During the course of EIC Implementation Seminars, SEER's staff helps the school develop an Evaluation Action Plan. This plan guides the school through the process of defining: specific, achievable outcomes; evidence and targeted indicators of improvement; responsible parties; required resources; and, an evaluation time frame.

At the core of the Evaluation Action Plan, the schools use two sets of rubrics developed as a collaborative effort of SEER's twelve member state education agencies.

SEER also provides support through their Web site. The site features EdGateway, a forum for information and resource-sharing, providing links to other online resources, and links to other EIC-based schools. The Web site provides resources for the following topics:

- ♦ Identifying a natural/community context for learning
- ♦ Problem- and issue-based learning as a focus for integrated-interdisciplinary instruction
- ♦ Integrated-interdisciplinary instruction
- ♦ Defining student implementation plans
- ♦ Team teaching
- ♦ Learner-centered, constructivist instruction
- ♦ Cooperative learning
- ♦ A framework for evaluating EIC programs

Resources

Abrams, K. S. (1999). Environmental Education and the Sunshine State Standards Pre-Kindergarten through Grade Twelve. Report prepared for the Office of Environmental Education, Florida Gulf Coast University.

Hoody, L. (1995). The Educational Efficacy of Environmental Education: An Interim Report. San Diego, CA: State Education & Environment Roundtable.

Lieberman, G. A. (1995). Pieces of a Puzzle: An Overview of the Status of Environmental Education in the United States. San Diego, CA: Science Wizards.

Lieberman, G. A., and Hoody, L. L. (1998). Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning. San Diego, CA: State Education & Environment Roundtable.

Lieberman, G. A. & Hoody, L.L. (1999). Implementing and Strengthening an EIC Program in Your School. San Diego: State Education and Environment Roundtable.

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Lieberman, G. A., Hoody, L.L & Lieberman G. M. (2000). Planning Guide for Implementing an EIC Program in Your School. San Diego: State Education and Environment Roundtable.

Lieberman, G. A. & Hoody, L.L. (2000). California Student Assessment Project: The Effects of Environment-based Education on Student Achievement. San Diego: State Education and Environment Roundtable.

Lozar-Glenn, J. (2000). Environment-Based Education: A Report on its Usefulness in Creating High-Performing Schools and Students, National Environmental Education & Training Foundation.

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