Education Using the Environment

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“I have a learning disorder and I can’t read well. Now our classes are like living books and I can learn so much better without feeling bad about myself. Teachers are actually listening to my opinions and we respect each other.” (7th grade female student)

One can only Imagine...

- middle school students engaged in real-world, community-based, and standards-aligned environmental investigative and service-learning projects that improve their school attendance, behavior, social skills, and ultimately grades.

- teachers of all disciplines working alongside parents, local businesses, universities and federal, state, county, and non-profit environmental groups, helping students connect learning and their lives to math, science, social studies and language arts.

- a process underway to build capacity and sustain a promising educational reform initiative within, and around, each school community and to develop effective leaders and organizations that design, implement, and link environmental education across the state to promote long-term sustainability.

- Environmental Education (EE) gaining renewed respect and value.

Imagine no more. Using the Environment as an Integrating Context (EIC)™ for learning is changing the way we teach and learn at eleven pilot middle schools.

What is EIC™?

The EIC™ Model employs natural and social systems as the context for learning while taking into account the “best practices” of successful educators. Each school designs an EIC™ program unique to them but successful EIC™ programs share the following fundamental strategies:

➢ Integrated, interdisciplinary instruction;
➢ Collaborative teaching methods;
➢ Community-based investigations;
➢ Learner-centered, constructivist approaches (students asking-teachers guiding);
➢ Cooperative and individual learning strategies; and
➢ Local community and natural settings as the context for learning and instruction.

The EIC™ model is based on national research conducted by the State Education and Environment Roundtable (SEER)©. Data collected in 48 schools, since 1996, indicate that EIC™ has significant positive effects on academic achievement, classroom behavior and instructional practices. The State Education and Environment Roundtable (SEER)© is a cooperative effort, among 16 state agencies that seek to improve student’s academic achievement in all core disciplines using the Environment as an Integrating Context for Learning EIC™ model. This model has shown success in every state where implemented. Visit the SEER© website at www.seer.org for information and the report: Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning.
Isn’t this Environmental Education?

“We cover more subjects in class and we don’t just have tests and worksheets this year, we work on projects, demonstrations, and reports.” (6th grade male student)

This is not traditional EE. Differences are subtle, but significant. EIC™ focuses on educational results: using the environment (integrating throughout all disciplines) to engage students in their education and enrich their learning process through “real-world”, hands-on, community-based experiences, with the ultimate goal of helping them achieve higher levels of overall academic success, and understanding and appreciating the environment.

Students study in depth about the relationships and interactions of their local natural and social systems. Community partners assist the teacher and parent in student learning. Students’ work together and individually and have input into their own course of study. They see teachers truly teaming and realize all subjects are connected and have value. Curriculum standards serve as the foundation. Students, teachers and partners determine a service-learning project that benefits their community.

Systems “thinkers” look at:
• the big picture,
• the long term,
• cause and effects (inputs and outputs both individually and collectively),
• multiple points of view which may lead to paradigm shifts,
• patience and collaboration as a means to resolution, and
• the many parts and their interrelationships and interactions that comprise the local natural and social systems.

What They Do

Students and teachers explore wetlands, large rivers, maritime forests, town creeks, tidal marshes and old rice fields. They investigate the impact of school traffic on air quality, the condition of their school’s water system, how erosion and poor drainage affects the quality of life, and the effect of culture and environment on a special island. For their community and school they build trails, water habitat gardens, and outdoor classrooms; recycle and pick up roadside litter, give presentations to school boards, PTO’s and town councils, write letters to key community officials and develop plans to support their local community in the years ahead. For middle school students of all cultures, academic levels, and locations, this becomes a major part of their standards-based instruction and curriculum as guided by their teachers, during the school year.

The Players

Middle schools: eleven middle schools (and districts) made a big decision to train staff and devote time to develop, implement and evaluate the EIC™ initiative: Colleton (Colleton), Conway (Horry), Forest Circle (Colleton), Gilbert (Lexington 1), Kelly Mill (Richland 2), Lady’s Island (Beaufort), Long (Chesterfield), Palmetto (Anderson 1), Pickens (Pickens), Rawlinson Road (York 3) and Waccamaw (Georgetown). Currently over 1200 middle school students, supported by over 85 teachers, administrators and community partners are involved.

Mentors and Partners: currently the following agencies, governments, foundations, and organizations share the vision by providing EIC™ school support with grants, materials, in-kind contributions, and employees:

• National Fish and Wildlife Foundation
• US Fish and Wildlife Service
The list remains incomplete and growing as many local businesses, agencies, parents and interested citizens around the schools lend time, money and expertise to the effort.

Core team mentors personally totaled almost 1500 hours assisting their schools. At the federal volunteer rate of $17 per hour, that translates close to $25,000.

**Why Middle School Students**

“My child hardly ever talked about school but now she can’t stop chatting about her EIC™ classes. She is now interested in school and her grades are really improved. You don’t know what a difference this has made with my daughter.” (Parent of 7th grade EIC student)

Middle schools were chosen due to the low academic performance exhibited historically by this age group. South Carolina’s ninth grade dropout and high school graduation rates, the end-of-course and tenth grade exit exam failures are among the highest in the nation. According to research by Lieberman and Hoody, 1998, *Closing the Achievement Gap, Using the Environment as an Integrating Context for Learning* a successful academic program for these students emphasizes personal attention, an environment promoting the sense “of belonging,” and motivated student engagement in school learning and other activities.

The quality of the middle school experience is the turning point for many adolescents. SC Kids Count 2000 reported that 42% of all South Carolina citizens, ages 18-34, have no diploma and the percentage keeps growing.

- Captain Planet Foundation
- Gaylord and Dorothy Donnelley Foundation
- V. Kann Rasmussen Foundation
- SC Department of Natural Resources
- SC Department of Parks and Tourism
- Richland, Lexington and Beaufort Soil and Water Conservation Districts
- Southeast Center for Ocean Science Education Excellence (COSEE)
- Environmental Education Association of South Carolina (EEASC)
- South Carolina Wildlife Federation (SCWF)
- Native Plant Society of South Carolina
- Colleton Museum
- Birchwood Center for Arts and Folk Life
- Palmetto Pride
- Lake Carolina Development, Inc
- US Forest Service
- Clemson University - Landscapes for Learning and SC MAPS/LIFE
- Kalmia Gardens at Coker College
- SC Forestry Commission
- SC Department of Education
- SC Department of Health and Environmental Control
- South Carolina Coastal Conservation League (SCCCL)
- York County Culture and Heritage Commission
- Wal-Mart Stores
- Project Oceanica – COASTeam
- Society of American Foresters (SAS)
- Master Gardeners of SC
- Cheraw Fish Hatchery
- Town Councils
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We believe that middle school students can, and will, respond to instructional strategies and classroom management practices that encourage student and teacher teaming, accountability, respect, and local community and service learning. Students can rise no higher than the level of expectations teachers give them.

The Plan

“I was not a good student last year. My behavior was bad and so were my grades. I am on the honor roll now and I don’t want to get into trouble. The teachers are cool and trying real hard. I don’t want them to be disappointed in me. I am proud to be on the EIC™ team.” (7th grade male student)

Our intent is to create a strong base of EIC™ support, both around the school and within the state, by leveraging available resources and decreasing fragmentation of effort and program duplication. We believe this imitative will lead to improvements in student behavior, grades and participation, and teacher confidence, skills, and practices.

Can We Measure Results?

“This year all my subjects are fun. But Mr. Falco, don’t tell anyone we are having fun, because they will think we are not learning anything and will take EIC™ away from us. I am learning, really, my grades are so much better and I won some awards that I never thought I could.” (6th grade female student)

Phillip Schlechty, author of “Shaking Up the Schoolhouse” writes, “Currently few educators and even fewer policymakers understand that processes can be measured, just as inputs and outputs can be measured. The consequence is that when changes in test scores occurs, few educators are in a position to diagnose the causes correctly.”

Our Goals

1: Strengthen teacher practices, confidence and skills
2: Improve student attitude, behavior, attendance, and participation
3: Strengthen student’s understanding of the interactions among natural and social systems
4: Improve student achievement in all core disciplines
5. Build capacity to sustain the EIC™ initiative

Is there Proof in the Pudding or just Fluff?

“I want to attend classes this year because all my teachers are so much more fun this year, and seem to care about my opinion. We are doing cool things. They have taught me respect for lots of things. Learning can be fun, especially being outdoors and helping our community. Even my teachers seem to have fun this year.” (7th grade male student)

Quantitative and qualitative data collected the first year by an outside evaluator show gains in student attendance, behavior, and attitudes - the first steps towards academic improvement. Teacher confidence and classroom management skills improved as students responded. Within this comprehensive education evaluation plan, efforts were made to control variables as much as resources and situations allowed.

Student survey results indicated that students tended to have strong positive feelings about English Language arts, teamwork and solving community problems, and their teachers’ ability to encourage them. They liked their core team teacher’s different instructional strategies. Students also said they rarely read nature-like books and had strong negative feelings about the behavior of others in their class.
It's hard to discount what the students are saying, writing and displaying. The descriptive writing below came from a student who has experienced very difficult times in school both academically and socially. It was written within several minutes and completely unedited. Like his teacher said, "something in the woods inspired him that day."

"Sounds of crickets in the open woods. The river running through a jungle of wonders. Birds are chirping the great mother of nature. The squirrels running through the woods with lots of freedom. Yes, I do love nature. Take care of your surroundings [sic] and you will be paid great rewards. The dirt is like soft sheets of feathers and just another thing trying to beautify the world." (7th grade male student, printed with permission)

Perspectives like that can inspire others and influence the world!

**Attendance and Behavior**

"Last year I had about 72 behavior referrals to the office because I just didn’t like my classes or my teachers and I was bored stupid. This year I had just one referral to the office and it really wasn’t my fault. I don’t want to get into trouble now; EIC™ is a neat way to learn and lots of fun. We are helping our community. I don’t want to let the teachers down they are really neat. My grades are holding steady too." (7th grade female student)

South Carolina is not alone concerning ninth grade and high school drop out rates. According to SC Kids Count 2004, an average of 35% of 8th graders failed to graduate from state schools five years later.

Getting middle school students to attend school regularly is a major concern. Once at school the issue becomes keeping students from disruptive behavior that leads to suspensions and minimal active and positive participation in their learning.

If they come to school, stay in class, allow others to learn, see value in their learning, and respect the teachers, academic achievement is bound to occur at some level. While this seems easy, it is difficult to maintain with adolescents without multi instructional strategies.

EIC™ schools are quite diverse concerning state grade card reports, economics, ethnicity, size, and location. We believe that integrated, community-based education may provide a partial solution to some adolescence school issues.

Teacher teams are not stacked with master teachers, but core team teachers did get more professional development, planning time, and resources provided to implement the model. Selected teachers willingly serve as change agents, work in a true-teaming and interdisciplinary environment with their colleagues, and modify their instructional strategies to include the student in his or her own real-world, community-based learning. Their classroom management and effectiveness is also translated into parent-teacher relationships.

"This is the first year, after 25 years of teaching, that I received no negative or irate parent calls for the entire year. It was amazing at best. Conversations about their student’s behavior and academics were civil and respectful, and the parents knew we were working together as a team and had their child’s best interests in mind." (Teacher)

The student profiles were similar between EIC™ and non-EIC™ students, with the exception of School 4 that had an entire group of lower achieving students. First-year behavioral data suggest that EIC™ is helping overcome student disengagement and has real potential to affect adolescent education. Within EIC™ classes many students are making an effort to attend class and not be disruptive. This translates into more effective classroom learning time, improved
civility towards others, and a more conducive learning environment. Reducing even a single behavioral referral and in school and out of school suspension means that student was exposed to more quality classroom instruction.

- **School 1:** EIC™ students had half the amount of discipline referrals than the non-EIC students. Student interviews showed an increased interest in learning and respect for their teachers.
- **School 2:** (entire grade participated in EIC™), EIC students' records were compared to their previous year prior to EIC. The total number of behavior referrals decreased by 56%. Total in- and out-of-school suspension hours decreased 75%, and absences decreased by 16%.
- **School 3:** the entire EIC™ team (30% of their grade) accounted for only 3% of all the behavioral referrals and 22% of the absentees. 64% of their EIC™ students received the academic incentive card (3.0 GPA) compared to the same 28% of the same students the previous year.
- **School 4:** EIC™ students decreased their absenteeism by 22% and suspensions by 36% from the previous year. All these students had a lower academic status and many had serious past behavioral issues.
- **School 5:** EIC™ students (35% of their grade) accounted for 25% of the students disciplined; 18% of in-school suspensions; and 14% of out-of-school suspensions.
- **School 6:** EIC™ students (37% of their grade) had 20% of the in-school grade-level suspensions and 8% of out-of-school suspensions.
- **School 7:** EIC™ students (19% of their grade) had 4% of the behavioral referrals, 4% of the in and out of school suspensions and 12% of the absenteeism's.

All ten schools that participated in the first year of implementation showed some degree of improved attendance, behavior and academic success. Factors such as mid-year teacher and administrative transfers or turnovers, district and school level budget issues, committed resources, reduced planning times for teachers, core team dynamics, and degree of professional development, all played key roles in the progress and success rate the first year. For year two, eleven schools, the original ten plus one, will participate.

**Student Achievement**

Pre and post environmental knowledge tests developed by teachers were given to all EIC students concerning their investigative projects. Students had a gain of up to 15 points on the posttest. The results are encouraging given the fact each school designed its own test and five months lapsed between students taking the pre and posttest.

The open-ended hypothetical scenario provided an insight into the student’s ability to apply their knowledge about the environment and the community agencies that are involved with the environment. Student scores varied widely across schools suggesting that students need help to learn about identifying environmental problems, identifying community resources, and understanding the impact that their work may have on the community.

One school that offers academic incentive cards noted that 64% of their 7th grade EIC students achieved the 3.0 GPA requirements. The previous year, only 28% of the same students as 6th graders got the card. They were not EIC participants then. PACT test scores and individual report cards of EIC students will be analyzed to see if there is upward annual movement.

Student and parent interviews supported the improved academic and behavioral findings. Students candidly talked about making the A/B honor roll for the first time ever, or receiving academic awards they never thought possible. Many students improved in all subject areas. They talked about their failing grades the year before, and how they are making big gains now. Some students said they made themselves sick just to avoid classes their previous year but not now.
To a student, the main factors included challenging curriculum and engaging instruction, hands-on activities and projects, caring teachers that work together, being outside, doing service-learning projects for their community, and having fun while learning.

And the Teachers

“This is my 10th year as a middle school teacher and quite frankly I was seriously thinking about quitting. But this year is the BEST year that I have ever had and the kids are responding in ways I never thought possible.” (Teacher)

First and foremost is quality, timely, and adequate professional development for teachers. A teacher is the oil that lubricates and stimulates the student’s mind. Ensuring standards-based curriculum that focuses on engaging, teaming, passionate and compassionate instructional strategies that appeals to and enters into, the middle school student’s world is vital. Ultimately this approach allows students to achieve some personal level of academic success.

Several teachers received school and district awards. A partnership with Clemson University afforded EIC teachers and their colleagues free SC MAPS training, materials and graduate credit through on-site instruction valued at over $1,000. Some EIC science teachers received free JASON training and will be using the integrated curriculum focusing on South Carolina wetlands to support their EIC projects. The SC Department of Health and Environmental Control (DHEC), Project Learning Tree and Texas Instruments have also given free teacher training and materials. The Museum of York County has offered free admission to EIC schools for their environmental programs that could total over $4,400 if all schools participated.

Teacher interviews and surveys show improved attitudes and classroom confidence, renewed enthusiasm for teaching, the acquisition of new skills to improve instructional strategies, the chance to truly team and integrate curriculum, and the freedom and ability to be creative with their students.

“I am having so much fun as a math teacher integrating real-world lesson plans and working with the other three content teachers on my EIC™ team. The students are taking a more enthusiastic interest in math.” (Teacher)

Awards and Recognitions

Through private grants secured by the State Department of Education, schools and teachers received about $113,500. This covered intensive professional development, materials, equipment such as computer microscopes, water test kits, graphing calculators, computer based labs with probes, field study transportation, and substitute teacher pay for core team planning. In addition, some schools received grants and private donations, including 15 computers, through their EIC involvement that totaled over $20,000. One school became Palmetto’s Finest Middle School for 2003-04 and the judges mentioned their EIC involvement. Several schools were DHEC’s monthly Champion of the Environment winners; another school won the Soil and Water Conservation District Award.

What’s next?

Currently, South Carolina’s EIC™ Demonstration School Network is a joint endeavor of the South Carolina Department of Education and SEER©.

Effort is underway to secure funding to sustain this initiative for an additional three years after May 2005. Early data show promise but we need more time. A professional outside
evaluator has been hired to develop, implement, collect and analyze second year data. A five-year effort is needed to support internal EIC™ school growth, provide adequate professional development, and determine the model's effectiveness with an authentic evaluation plan.

There is a tendency to create good ideas while lacking the long-term vision, plan and resources. We must give it a fair chance or we will never know. While this model is not a remedy for all our educational and societal ills, it certainly shows promise. Whether this instructional strategy becomes an influential ingredient in middle school reform, and ultimately South Carolina's need to have civil, healthy, informed, and educated future leaders, depends on us.

“We learn, then become what we choose.”

If you would like to join our team, contact Edward H. Falco, Environmental Education Consultant, South Carolina Department of Education, 801-D Rutledge Building, 1429 Senate Street, Columbia, SC 29201 or e-mail efalco@sde.state.sc.us; phone 803-734-8861; Fax 803-734-6142.