Symbiosis: Public Schools, Community Resources, EE and University Teacher Programs

Dr. Cheryl Boyette, John Boyette, Elyce Rodewald, Zoe Ann Stinchcomb, Dr. Alan Sowards

Arthur Temple College of Forestry and Agriculture
STEPHEN F. AUSTIN STATE UNIVERSITY
Pineywoods of Deep East Texas
1998
Kellogg Foundation
Growing Minds Project
Dr. Alan Sowards & Dr. Cheryl Boyette
Best Practices

- Guidelines for Excellence in Environmental Education
- Guidelines for Excellence in Teacher Preparation Programs

naaee.org
Capstone learning experiences for SFA Elementary Education majors
A collaboration involving SFA, community and business partners, state agencies and national foundations.

Boyette Consulting
Bugs, Bees, Butterflies and Blossoms
Bugs, Bees Butterflies & Blossoms

- Held in April
- 5 days
- 16 stations
- K-3rd grade
- Classes visit four stations (30 min. each)
- SFA Elementary Education majors teach at each station

Wetland Adventure

- Held in October
- 3 days
- 15 stations
- 4-8th grade
- Classes visit three stations (45 min. each)
- SFA Elementary Education majors teach at each station

Arthur Temple College of Forestry and Agriculture
Stephen F. Austin State University
Our Mission
expand their knowledge
explore the natural world
develop curiosity
nurture a sense of wonder
create community connections
discover inter-relationships
observe stewardship
Question what is and imagine what could be.
Located in Athens, TX
educational
entertaining visitor experience
that promotes freshwater sport fishing
and the enhancement, conservation & stewardship of aquatic resources in Texas
Highlights include:
Fish culture
Wetland Trail
So, why do we do it?
Partnerships
Effective Programming
Onsite Professional Development
Stephen F. Austin State University
James E. Perkins College of Education
A foundation for success and a passion for learning,
a commitment to responsible global citizenship
research, creativity and service.
Goal

- Collaboration with external partners.
Goal:

Conduct research to advance knowledge and contribution to the common good.

• Former Student Returns With Her Class
Education Outcomes
Knowledge of Learning Theory

Using a Key

Model Materials
Knowledge of Diverse Learners and Positive Learning Environment
Content Knowledge

Assessment & Instruction

Professionalism & Life Long Learning
Pre-service Teacher Preparation: BBBB
Training Application
Every Tree for Itself

Training

Application
Planning/Set-up
Application
Wetland Adventure

Training

Energy Transfer Through the Food Chain
Planning and Training

- Aquatic WILD training
- Oh Bass!
- EnviroScape
Wetland Adventure
Planning/Set-up
Application
Wetland Adventure
Texas A&M Forest Service provides statewide leadership to
Project Learning Tree uses the forest
responsible action on behalf of the environment.
Evaluation

Elementary School Students

Content Knowledge Gains
A significant difference was observed between the Comparison Group and Treatment post-test scores.
<table>
<thead>
<tr>
<th>Group</th>
<th>Condition</th>
<th>N</th>
<th>Pretest Mean</th>
<th>Posttest Mean</th>
<th>Diff. In Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Comparison w/pretest</td>
<td>26</td>
<td>7.09</td>
<td>8.50</td>
<td>1.14</td>
</tr>
<tr>
<td>2</td>
<td>Comparison No pretest</td>
<td>30</td>
<td></td>
<td>7.967</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Treatment w/pretest</td>
<td>28</td>
<td>7.34</td>
<td>11.17</td>
<td>3.83</td>
</tr>
<tr>
<td>4</td>
<td>Treatment No pretest</td>
<td>30</td>
<td></td>
<td>11.16</td>
<td></td>
</tr>
</tbody>
</table>
No significant differences were observed by the variables Gender or Race.
<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-Test</th>
<th>Post-test</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>48.7</td>
<td>65.0</td>
<td>0.001</td>
</tr>
<tr>
<td>Control</td>
<td>46.26</td>
<td>46.4</td>
<td>ns</td>
</tr>
</tbody>
</table>
How this Model benefits teacher certification programs

Or, Why universities should partner with informal learning sites
Content Knowledge Gains

**BBBB**
- 2006: N=125
- Pre-test Mean: 74.0
- Post-test Mean: 87.1

**Wetland Adventure**
- 2007: N=55
- Pre-test Mean: 66.0
- Post-test Mean: 90.6
2010 Perkins Research Grant: 
Comparison of the BBBB and Wetland Adventure Programs

• Both programs showed significant gains in science content knowledge
• BBBB p=0.000 and WA p=0.000 , significant at p=0.05)
Science teaching self-efficacy

Is a teacher’s belief in their ability to successfully teach science and have their students attain given levels of achievement. It is an expression of capacity level and strength of that belief.
Science Teaching Efficacy Belief Instrument-Pre-service (STEBI-B)

- Significant Differences Observed Between Pre-test and Post-test Efficacy Scores 2011
<table>
<thead>
<tr>
<th>Event</th>
<th>N</th>
<th>Significance 2-tailed**</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBBB</td>
<td>59</td>
<td>p=0.000</td>
<td>.831</td>
</tr>
<tr>
<td>Wetland Adventure</td>
<td>77</td>
<td>p= 0.000</td>
<td>.785</td>
</tr>
</tbody>
</table>

** Significant at 0.05 level
Trained Pre-service Teachers vs. Agency Professionals
How important was this experience in preparing you to teach?
<table>
<thead>
<tr>
<th>Event</th>
<th>Very Important</th>
<th>Important</th>
<th>Not Important</th>
<th>Waste of Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBBB 2006</td>
<td>79%</td>
<td>16%</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>BBBB 2011</td>
<td>82%</td>
<td>17%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BBBB 2011 On-Line</td>
<td>77%</td>
<td>23%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetland 2008</td>
<td>59.2%</td>
<td>39.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetland 2011</td>
<td>66.7%</td>
<td>33.3%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Summary: Elementary Students

- Content Knowledge
- Gender and Race
Summary: Pre-Service Teachers

• Significant gains in content knowledge.

• Significant gains in science teaching efficacy.

• Experience Important to Very Important (95-100%) in preparing them to teach.
REPLICANTS

The best ideas are stolen
Bee Cave Elementary School

Former SFA Students

June 1, 2012
Middle School in Denison, Texas

On-line SFA Students
May 2012
Denison
How?
Assemble a team...
University Professor

Dr. Alan Sowards-SFASU

- Infuses EE into science teaching methods course
Community Resource

Elyce Rodewald-SFA Gardens
Zoe Ann Stinchcomb-TFFC

• Provides location for event
• Recruits elementary schools
• Schedules schools
• Sends pre-visit packets
• Coordinates volunteers
Liaison

Dr. Cheryl Boyette

• Develops lessons for event
• Coordinates lessons to state standards
• Develops pre-visit info for elementary teachers
• Schedules SFA interns
• Coordinates support services, community resource and university professor
Project Learning Tree Coordinator

John Boyette

- Trains SFA interns in PLT curriculum
- Modifications for special event
- Training a couple of hours at a time over many weeks
Evaluator

Dr. Cheryl Boyette

• Research and design evaluation instruments
• Implement testing or data collection
• Analyze data and report to partners
• Provide guidance and support for program
Support Services

Texas A&M Forest Service

• Set up tents and tables
• Put out water coolers
• Pick up trash
Volunteers

Pineywoods Beekeepers, SFA Gardens
Volunteers, TFFC AmBASSadors

• Provide expert presentations
• Assist with logistics
• Meet, greet, guide
Plan Ahead!

- Set dates
- Take reservations
- Curriculum decided 3-4 months before event
- Pre-visit packets out 3 weeks prior to event
- Set-up weekend before
Funding

Grants

Sponsorships

Fees
Partners

- 1 University; 2 colleges, 3 departments
- 4 State agencies
- 2 Foundations
- 11 Non-profits
- 1 Private business
2 Programs, 1 Common Goal

- **BBBB**
  - 3100+ elementary school students
  - 164 elementary school teachers
  - 300+ parents
  - 10 Arboretum volunteers
  - 8 beekeepers
  - 100 SFA Elementary Education majors
  - 5 Texas Forest Service employees
  - 1 professor
  - 1 education coordinator
  - 1 consultant/ liaison

- **Wetland Adventure**
  - 1,000 students grades 4-8
  - 90 teachers & aides
  - 100 parents and siblings
  - 5 TFFC volunteers
  - 90 SFA Elementary Education majors
  - 1 professor
  - 1 education coordinator
  - 1 consultant/ liaison
Preparing teachers to embrace EE
using community resources and place based learning experiences