An undergraduate experiential learning activity to improve communication skills and engage public school students in forest ecological principles

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Background

Began with a small U.S. Fish and Wildlife Foundation Grant – Goal was to **increase engagement of public school students with Wild Refuge system**, visited Mason Neck National Wildlife Refuge

Continued work at Mason Neck National Wildlife refuge with an EPA grant

Expanded with a USDA Challenge **Ambassadors for Conservation Education (ACE) Program**

ACE Program involved students from **Virginia Tech** and University of Georgia
Objectives

Enhance the public speaking and leadership abilities of undergraduate students
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Increase public school student understanding of forested ecosystems and scientific data collection (e.g. can students collect accurate data)
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Encourage public school student use of public forested areas (e.g. National Wildlife Refuge, State Parks).
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Enhance the public speaking and leadership abilities of undergraduate students

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Encourage public school student use of public forested areas (e.g. National Wildlife Refuge, State Parks)

Recruit students into natural resource based careers
Plot and data bases

0.02-ha area permanent plots established

Accurate tree diameter (>10 cm)

Tree species identified and tagged
Plot and data bases

Plot/Tree **data**, along with the exercise **objectives**, field trip preparation material (e.g., data sheets), were placed on the internet for use by teachers.
School classes then visit and re-measure the plots

Two public areas (Mason Neck, Virginia and Indian Springs State Park, Georgia)

Six high schools with forests within walking distance (Virginia only)
Why we added the schools with nearby forests

Anecdotal comments from teachers indicated they would not revisit off site plots if grants didn’t pay for buses.

Results from a southern Piedmont teacher survey confirmed this.
**Survey results:** What limits teachers from participating in field trips (n=302)

<table>
<thead>
<tr>
<th>Limitation</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Money limits me from taking forestry related field trips</td>
<td>4.17</td>
</tr>
<tr>
<td>Time constraints limit me from taking forestry related field trips</td>
<td>4.14</td>
</tr>
</tbody>
</table>

1 strongly disagree – 5 strongly agree
Survey results: What limits teachers from participating in field trips

55.6% of teachers have a forest within walking distance
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<table>
<thead>
<tr>
<th>Frequency of Field Trips</th>
<th>No forest</th>
<th>Forest nearby</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>110 (85%)</td>
<td>57 (35%)</td>
</tr>
<tr>
<td>2</td>
<td>16 (12%)</td>
<td>41 (25%)</td>
</tr>
<tr>
<td>3</td>
<td>2 (2%)</td>
<td>43 (27%)</td>
</tr>
<tr>
<td>4</td>
<td>1 (1%)</td>
<td>20 (13%)</td>
</tr>
</tbody>
</table>
Survey results: What limits teachers from participating in field trips

<table>
<thead>
<tr>
<th>Factors</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>School curriculum</td>
<td>63%</td>
</tr>
<tr>
<td>Lack of time</td>
<td>67%</td>
</tr>
<tr>
<td>Lack of money</td>
<td>61%</td>
</tr>
</tbody>
</table>

Factors **most mentioned** in comments as **limiting** to field trips.
Survey results: What limits teachers from participating in field trips

Factors *rarely mentioned* in comments as limiting to field trips

<table>
<thead>
<tr>
<th>Factor</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of training</td>
<td>5%</td>
</tr>
<tr>
<td>Living in the City</td>
<td>1%</td>
</tr>
<tr>
<td>Bad Student behavior</td>
<td>2%</td>
</tr>
<tr>
<td>Large Class Size</td>
<td>2%</td>
</tr>
<tr>
<td>No bus</td>
<td>1%</td>
</tr>
</tbody>
</table>
Undergraduate students (both in Virginia and Georgia) enrolled in a communication class where they were taught principles of effective communication and leadership.

The class emphasized outdoor environmental teaching with numerous outdoor practice sessions where students improved their skills at teaching outdoors in informal settings.
Teaching Days

Undergraduates then led high school field trips where students and their teachers visited the plots and collected the same information in the pre-established plots.

High school students learned principle of tree identification, use of diameter tapes, increment borers and soil augers.
Results/Observations

Data collection by students and their teacher is very inaccurate unless plots are clearly identified and they are closely supervised by an instructor.

- 55% when with teacher from school
- 98% when with university faculty
- 85% when with undergraduate instructor
This inaccuracy was despite very intensive teacher training both indoors and outdoors.
Results/Observations

Significantly more public school students are reached by sending undergraduate instructors to individual schools

Individual school visits -- 6 schools, 19 classes and 274 students

Field trips to public area -- 2 schools, 2 classes and 48 students (2011), 36 students (2010)
Results/Observations

In the absence of outside money, schools are very unlikely to visit distant areas.
Questions/Discussion

www.savestadiumwoods.com