GILCOMPO

The **Global Interactive Learning** through **Climate Observation** by **Many People Organization**
Connecting HS Students to the World Through Science Research

Atmospheric Reconstructions over the Earth (ACRE) 3rd Workshop on Reanalysis and Applications

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Motivation

Commack High School

Part of

MISSION STATEMENT

Acquire the necessary knowledge, skills, attitudes, and values to become a successful, contributing member within our school community and greater society.
Familiar Place of Learning
Familiar Place of Learning
Students are web savvy, their experiences are reshaping the way in which learning will take place in traditional schools.

“No textbooks. I’m strictly Web-fed.”
New Classroom Opportunities

Modern classrooms do not need to have defined boundaries. Students have access to unlimited learning and collaborative opportunities.
Concept

• Classroom can no longer be defined by its 4 walls

• Connect to sources outside the classroom for innovative and authentic science research projects is a role the teacher can play

• Research questions derived from student interest, experience and curiosity are the point of departure from which the Internet can provide access to an amazing array of resources

• At Commack High school our students have contacted science professionals, with mutual research interests, who volunteer to be Internet (Cyber) mentors
Examples
Students Working with Mentors
In Living Color: Bacterial Pigments as an Untapped Resource in the Classroom and Beyond

Louise K. Charkoudian¹, Jay T. Fitzgerald¹, Chaitan Khosla¹*, Andrea Champlin²*

¹ Stanford University, Stanford, California, United States of America, ² School of the Museum of Fine Arts, Boston, Massachusetts, United States of America

Box 1: Concepts at a Glance

Leads into chemistry, microbiology, and biotechnology

- Chemical composition of paint (solubility and states of matter)*, ‡
- Structures of pigment molecules (electromagnetic radiation, electron configuration, valence bonds, molecular orbital theory)*
- Culturing Streptomyces and extracting their pigments (sterile culture techniques, natural product extraction techniques, solubility)*
- Painting Streptomyces on agar plates (bacterial growth control)*, ‡
- Engineering bacteria to make new pigments (metabolic engineering of
Hello Richard Kurtz,

Good to hear that some similar experiments are actually happening in your high school.

Your project course sounds interesting and innovative. Would you mind telling us a little more about it?

I am very interested in continuing to hear about your experiences and ideas.

Please keep in touch as your projects develop.
An Epidemiological Comparison Between Youth Ice Hockey and Lacrosse Injuries - On-line Surveillance of HS Sports Injuries – Ohio State University

Table 1. Sample contingency table of observed values for duration of injury

<table>
<thead>
<tr>
<th></th>
<th>1-2 Days</th>
<th>3-6 Days</th>
<th>7-9 Days</th>
<th>10-21 Days</th>
<th>22 Days or More</th>
<th>Medical Disqualification/Other/Unknown</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hockey</td>
<td>6</td>
<td>14</td>
<td>9</td>
<td>13</td>
<td>8</td>
<td>5</td>
<td>55</td>
</tr>
<tr>
<td>Lacrosse</td>
<td>14</td>
<td>23</td>
<td>9</td>
<td>10</td>
<td>7</td>
<td>8</td>
<td>71</td>
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<tr>
<td>Totals</td>
<td>20</td>
<td>37</td>
<td>18</td>
<td>23</td>
<td>15</td>
<td>13</td>
<td>126</td>
</tr>
</tbody>
</table>

Table 2. Sample contingency table of observed values for duration of injury

<table>
<thead>
<tr>
<th></th>
<th>1-2 Days</th>
<th>3-6 Days</th>
<th>7-9 Days</th>
<th>10-21 Days</th>
<th>22 Days or More</th>
<th>Medical Disqualification/Other/Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hockey</td>
<td>8.73</td>
<td>16.15</td>
<td>7.86</td>
<td>10.04</td>
<td>6.55</td>
<td>5.67</td>
</tr>
<tr>
<td>Lacrosse</td>
<td>11.27</td>
<td>20.85</td>
<td>10.14</td>
<td>12.96</td>
<td>8.45</td>
<td>7.33</td>
</tr>
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</table>

Table 3. Sample single-variable (single-sport) contingency table of observed and expected values

<table>
<thead>
<tr>
<th></th>
<th>Skating</th>
<th>Shooting</th>
<th>Passing</th>
<th>Being Checked</th>
<th>Receiving Pass</th>
<th>Checking</th>
<th>Other</th>
<th>Chasing Loose Puck</th>
<th>Goaltending</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hockey</td>
<td>17</td>
<td>2</td>
<td>3</td>
<td>19</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>55</td>
</tr>
<tr>
<td>Expected</td>
<td>6.11</td>
<td>6.11</td>
<td>6.11</td>
<td>6.11</td>
<td>6.11</td>
<td>6.11</td>
<td>6.11</td>
<td>6.11</td>
<td>6.11</td>
<td>55</td>
</tr>
</tbody>
</table>
Communication of Medication Labeling Information: Crossing Cultural and Language Barriers – Pharmacists without Borders

<table>
<thead>
<tr>
<th>Form</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity</td>
<td>Two</td>
</tr>
<tr>
<td>Route</td>
<td>Mouth</td>
</tr>
<tr>
<td>Frequency</td>
<td>Twice Daily</td>
</tr>
<tr>
<td>Precautions</td>
<td>No Alcohol</td>
</tr>
<tr>
<td>Forma</td>
<td>![Image]</td>
</tr>
<tr>
<td>---------------</td>
<td>----------</td>
</tr>
<tr>
<td>Quantità</td>
<td>1—UNO</td>
</tr>
<tr>
<td>Il Percorso</td>
<td>![Image]</td>
</tr>
<tr>
<td>La Frequenza</td>
<td>![Image]</td>
</tr>
<tr>
<td>Le Precauzioni</td>
<td>![Image]</td>
</tr>
</tbody>
</table>
Storm Surges in the Big Apple: The Effect of Atmospheric Conditions on Storm Surge Frequency and Intensity – SUNY Stony Brook

Figure 4: A plot comparing the sea level pressure between moderate and minor storm surges. The green dot represents the time of maximum surge.
Figure 3: A plot comparing the average u and v wind values for all time intervals between moderate and minor storm surges.
A Review of the Process
Student expresses an interest and begins contact search
*Applied Math and Actuarial Science*

Teacher makes initial contacts via e-mail
*Casualty Actuarial Society*

Establish a working relationship with mentor
*M. John Buchanan*
*Climate Change Student Outreach Chairperson for the Casualty Actuarial Society*

Work with Mentors to plan, implement and complete research project
*Historical Climate Change Project*

Establish contacts with others interested in working with students
*M. Gilbert Compo of the Climate Diagnostics Center, NOAA and Eric Freeman, National Climactic Data Center*
Conclusion

• Collaborative efforts demonstrate the enormous potential impact that scientists can have on the educational experiences of young people.

• Collaborative efforts can lead to career gateways for young people and useful and meaningful research.
Next Steps

• Increase affiliation and develop working relationships with ACRE US CEDS group
• Teacher-to-teacher collaboration developing projects with students from different schools (National and International levels)
• Modifying and adapting through existing (GLOBE) and new platforms to connect HS Students to the world through Science Research
Thank you

• Third Atmospheric Circulation Reconstructions over the Earth Workshop (NOAA, NASA, NSF and U.S. CLIVAR)
• Mr. John Buchanan, Climate Change Student Outreach Chairperson for the Casualty Actuarial Society
• Mr. Gilbert Compo, Climate Diagnostics Center NOAA
• Eric Freeman, National Climactic Data Center
• Ms. Marni Wasserman, High School student
• Administration, Faculty and Students, Commack Union Free School District