Science Success Story

Barb Light
Brimley Area School
My contact info:
lightb@eup.k12.mi.us
A few things about me...

• I have taught science for 19 years.
• I believe every student can and should learn the state content expectations.
• I haven’t really taught if the students haven’t really learned.
• I think educational technology is tremendously improving education for both teachers and students.
What do students want from teachers?

• A nice/fair teacher
• To learn what they will need to know
• A “not boring” class
• To sit by their friends
• To feel valued

What do teachers want?

• To be a nice/fair teacher
• To teach what students will need to know to be successful in their futures
• An engaged class
• A community of learners
• To make a difference and empower my students
What happened when I focused on what students wanted?

Science MEAP Score Comparison

<table>
<thead>
<tr>
<th>Years</th>
<th>Brimley</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>70</td>
<td>65</td>
</tr>
<tr>
<td>2003</td>
<td>80</td>
<td>66</td>
</tr>
<tr>
<td>2004</td>
<td>60</td>
<td>64</td>
</tr>
<tr>
<td>2005</td>
<td>88</td>
<td>77</td>
</tr>
<tr>
<td>2006</td>
<td>91</td>
<td>75</td>
</tr>
<tr>
<td>2007</td>
<td>95</td>
<td>79</td>
</tr>
<tr>
<td>2008</td>
<td>89</td>
<td>76</td>
</tr>
</tbody>
</table>
What would you like to hear about?

- District gender issue
- Special education/socio-economic status issue
- Ethnicity data
2005-2006 Elementary Percent Passed

- CLA
- Reading
- Writing
- Math
- Science
- Social Studies

[Bar chart showing the percentage of students passed in different subjects for male and female students.]
2005-2006 Middle School Percent Passed

- CLA
- reading
- writing
- math
- science
- social studies

Chart showing percent passed for male and female in various subjects.
Boys, boys, boys!

• Four years ago administrators noticed that we had 3 boys and about 25 girls recognized as honor roll students at the end of the year banquet (grades 7-12).

• A look at MEAP data by gender, showed a big difference between boys and girls.

• We knew we had to do something to promote boys academic achievement…

Help me!
Our problem may not be unique...
What questions were raised?

• Was the problem instructional – did we need to change the way we taught?
• Was the problem a community/school culture problem – was it “cool” for boys to underachieve?
• Was the problem K-12 or specific to a certain grade range – did it start in elementary?
• Did Brimley boys underachieve Brimley girls in all subjects or only certain subjects – was it an ELA specific problem?
Data showed

- It’s not exactly subject specific – although boys did well in science, they underperformed girls in all other subjects on MEAP.
- The problem did start in elementary, but worsened in middle and high school.
- Ultimately, we attributed the problem to a combination of instructional practices and community/school cultural norms.
What would you do?

• If this was your school, what things might you try?
• Take a few minutes to brainstorm ideas.
What did we do?

- Boys, boys, boys speaker
  - Changes in instructional strategies
  - Changes in behavior expectations of boys

- Change climate to do more to recognize all high achieving students
Boys (and Girls) Speaker

• Dan Hodgins (DKJ5075@aol.com)
• Brain based research about gender differences and how they impact learning
• Hormonal based research about gender differences and how they impact learning
• Numerous ideas for effective instructional methods to reach boys and girls
Some Lesson We Learned

• Boys develop motor skills before thinking skills
• Girls develop thinking skills before motor skills
• To learn best boys need the room $69^0$ F or cooler, while girls learn best at $75^0$ F
• Boys work better in bright lights, with less visual distractions, and they respond to loud noises
• Girls work better in dim lights
In Group Work

• Boys should be given the opportunity to manipulate visuals and move around
• Girls should be given the opportunity to discuss ideas with each other
Dan Hodgins said:

Make Sure Literacy Activities are Relevant…..

Talking and writing about “Poop” is not just a word but a major life experience for boys……...

Get Over IT.
The New Version: Yankee Doodle

Yankee Doodle
Went to town
A riding on a spider
Stuck an apple up his butt
And peed apple cider.
Is it working?

- YES!!
- Improved boys grades
- Improved boys MEAP scores
- Better engagement of boys in school
- Girls science scores have come up

Thanks.
2008-2009 Elementary Percent Passed
2008-2009 Middle School Percent Passed

CLA  reading  writing  math  science  social studies

[Bar chart showing the percentage of males and females who passed each subject: CLA, reading, writing, math, science, social studies.]
Special Education

- My first two years at Brimley I realized I had students who could not read the textbook.
- I knew I needed to make BIG changes to help my lowest ability students successful.
Why did I stop using a textbook?

- Our text was listed on a list of woefully inadequate texts.
- I have enough experience and education to create lessons without a text.
- Technology makes delivering material easy.
I love no textbook!

- No textbook forms, no rebinding, no erasing dirty words, no textbook expense
- No worrying about reading level and my students who can’t read
- Not having a textbook actually makes my life easier and gives me more control of what my students learn in my class.
Aligned curriculum is critical.

- My lesson plans all begin with the state standard or grade level content expectation.
- Dump “frog units” out of your curriculum.
Turn and Share

• What percent of your students don’t do their homework on a regular basis?
• Why do you think they don’t do the homework?
The truth about my students:

• Many of them don’t do homework.
• I have nonreaders in my classes every year.
• Some students come from homes that do not support their kids emotionally, much less educationally.
• A few of them would rather stay at school every night than go home to their families.
Therefore...

• I don’t trust their parents to be their teacher.
• I don’t expect them to have a home environment conducive to doing homework.
• My goal is to teach in class everything they need to know about every state standard I am assigned to teach!
Role of Homework:

• Enhance the education of the gifted or motivated students
• Practice something that can only be learned by repetition
• Teach students how to be responsible
What if they don’t do it?

- Monthly homework assignments are worth 10% of their overall grade
- Daily work – anything we do in class plus science fair is worth 55% of their overall grade
- (That leaves 35% for tests and quizzes)
A few other thoughts...

• Giving busy work as homework decreases your popularity with students.
• Your professional relationship with your students has a huge impact on how well they learn in your class.
• Good teachers deliberately work to have a good image with their classes because students learn more when they like the teacher.
• Extra credit is free. Free time is free. Candy is cheap (use sparingly).
Does it work??
Science MEAP Proficiency Report with AYP Groups for Eastern Upper Peninsula ISD, Brimley Area Schools, Brimley Jr./Sr. High 2008/2009 School Year - Grade 08

- **Level 1:** Advanced
- **Level 2:** Proficient
- **Level 3:** Not Proficient
- **Level 4:** Partially Proficient

<table>
<thead>
<tr>
<th>Group</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>70%</td>
</tr>
<tr>
<td>Am Ind/AK Native</td>
<td>60%</td>
</tr>
<tr>
<td>Asian or Pac. Isl.</td>
<td>50%</td>
</tr>
<tr>
<td>White</td>
<td>40%</td>
</tr>
<tr>
<td>EDD</td>
<td>30%</td>
</tr>
<tr>
<td>SWD</td>
<td>20%</td>
</tr>
<tr>
<td>Category</td>
<td>Level 1</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
</tr>
<tr>
<td>All</td>
<td>22 (48.9%)</td>
</tr>
<tr>
<td>Am Ind/AK Native</td>
<td>11 (45.8%)</td>
</tr>
<tr>
<td>Asian or Pac. Isl.</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>White</td>
<td>11 (57.9%)</td>
</tr>
<tr>
<td>EDD</td>
<td>7 (50%)</td>
</tr>
<tr>
<td>SWD</td>
<td>2 (50%)</td>
</tr>
<tr>
<td>Category</td>
<td>Level 1</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------</td>
</tr>
<tr>
<td>All</td>
<td>23 (62.2%)</td>
</tr>
<tr>
<td>Am Ind/AK Native</td>
<td>11 (52.4%)</td>
</tr>
<tr>
<td>Black</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>White</td>
<td>12 (80%)</td>
</tr>
<tr>
<td>EDD</td>
<td>12 (60%)</td>
</tr>
<tr>
<td>SWD</td>
<td>1 (33.3%)</td>
</tr>
</tbody>
</table>
Science MEAP Proficiency Report with AYP Groups for Eastern Upper Peninsula ISD, Brimley Area Schools, Brimley Jr./Sr. High 2006/2007 School Year - Grade 08
### Science MEAP Proficiency Report with AYP Groups for Eastern Upper Peninsula ISD, Brimley Area Schools, Brimley Jr./Sr. High 2006/2007 School Year - Grade 08

<table>
<thead>
<tr>
<th>Category</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Number Met</th>
<th>Not Met</th>
<th>Total Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>14 (42.4%)</td>
<td>16 (48.5%)</td>
<td>3 (9.1%)</td>
<td>0 (0%)</td>
<td>30 (90.9%)</td>
<td>3 (9.1%)</td>
<td>33</td>
</tr>
<tr>
<td>Am Ind/AK Native</td>
<td>6 (33.3%)</td>
<td>9 (50%)</td>
<td>3 (16.7%)</td>
<td>0 (0%)</td>
<td>15 (83.3%)</td>
<td>3 (16.7%)</td>
<td>18</td>
</tr>
<tr>
<td>Black</td>
<td>0 (0%)</td>
<td>1 (100%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1 (100%)</td>
<td>0 (0%)</td>
<td>1</td>
</tr>
<tr>
<td>White</td>
<td>8 (57.1%)</td>
<td>6 (42.9%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>14 (100%)</td>
<td>0 (0%)</td>
<td>14</td>
</tr>
<tr>
<td>EDD</td>
<td>6 (37.5%)</td>
<td>8 (50%)</td>
<td>2 (12.5%)</td>
<td>0 (0%)</td>
<td>14 (87.5%)</td>
<td>2 (12.5%)</td>
<td>16</td>
</tr>
<tr>
<td>SWD</td>
<td>0 (0%)</td>
<td>2 (50%)</td>
<td>2 (50%)</td>
<td>0 (0%)</td>
<td>2 (50%)</td>
<td>2 (50%)</td>
<td>4</td>
</tr>
</tbody>
</table>
### Science MEAP Proficiency Report with AYP Groups for Eastern Upper Peninsula ISD, Brimley Area Schools, Brimley Jr./Sr. High 2005/2006 School Year - Grade 08

<table>
<thead>
<tr>
<th>Category</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Number Met</th>
<th>Not Met</th>
<th>Total Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>10 (24.4%)</td>
<td>26 (63.4%)</td>
<td>5 (12.2%)</td>
<td>0 (0%)</td>
<td>36 (87.8%)</td>
<td>5 (12.2%)</td>
<td>41</td>
</tr>
<tr>
<td>Am Ind/AK Native</td>
<td>5 (29.4%)</td>
<td>12 (70.6%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>17 (100%)</td>
<td>0 (0%)</td>
<td>17</td>
</tr>
<tr>
<td>Black</td>
<td>0 (0%)</td>
<td>1 (100%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>1 (100%)</td>
<td>0 (0%)</td>
<td>1</td>
</tr>
<tr>
<td>White</td>
<td>5 (23.8%)</td>
<td>11 (52.4%)</td>
<td>5 (23.8%)</td>
<td>0 (0%)</td>
<td>16 (76.2%)</td>
<td>5 (23.8%)</td>
<td>21</td>
</tr>
<tr>
<td>EDD</td>
<td>3 (18.8%)</td>
<td>11 (68.8%)</td>
<td>2 (12.5%)</td>
<td>0 (0%)</td>
<td>14 (87.5%)</td>
<td>2 (12.5%)</td>
<td>16</td>
</tr>
<tr>
<td>SWD</td>
<td>1 (14.3%)</td>
<td>6 (85.7%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>7 (100%)</td>
<td>0 (0%)</td>
<td>7</td>
</tr>
</tbody>
</table>
Why do Native American students excel in science?

- No textbook?
- Science fair?
- Relationship building?
- Project based learning?