

“Let There Be Night”

In-Service #1

Fall 2008

Why are we doing this? As a community we’re going to practice and discuss science. This is not a worksheet driven project. LTBN is a practical application, hands-on project driven by the scientific method that will involve over 6,000 P-H-M students.

P-H-M is leading this global dark skies initiative in the 2009 International Year of Astronomy, which commemorates the 400th anniversary of Galileo’s discoveries with a telescope.

Why should I Care? By implementing better lighting practices:

- you save money and energy;
- you improve safety for motorists and pedestrians;
- you increase security and the sense of well-being;
- you benefit animal habitats;
- you preserve the starry night;
- you improve the quality of life;
- you lessen greenhouse gas emissions that contribute to global warming.

What do you want Teachers to do?

Help us to motivate and guide your kids in conducting this investigation.

Intertwine it with other disciplines as well as science in your school--

Mythology, History, Geography, Mathematics (counting, averages, etc.) Science (EM Spectrum), Language Arts (reading/writing), and Art.

Present other lessons from the DVD that dovetail with your regular classroom instruction.

Guide students in conducting the experiment including classroom discussion and interpretation of results.

Identify a five-member team from your school.

Timeline for this Project

September 22 to March 6

September 22 – October 3

October 1 to December 1

November 4 – November 19

January 5 - March 6

PLANETARIUM PRESENTATIONS

TEACHER IN-SERVICE PART 1

PRACTICE ORION STAR COUNT

TEACHER IN-SERVICE PART 2 “Nuts n’ Bolts”

CLASSROOM INSTRUCTION

Present Let There Be Night elements of your choice to your students sometime between early January and the first week of March.

******MARCH 14 to MARCH 28, 2009 QUANTIFYING LIGHT POLLUTION and Data Analysis (Orion Count, SQM Count) Grades Three Thru Eight**

The second half of March all Third through Eighth Grade students in PHM will quantify light pollution by the Orion Star Count. Students will compare their respective views of Orion as seen from outside their home at night with Orion star charts that have various levels of light pollution. A few Fifth and Eighth Grade students will quantify light pollution using hand held Sky Quality Meters. All students, with Teacher assistance, will transfer their data to a wall map, enter the data on line, identify emerging patterns and discuss implication of the data.

April 1 - May 1, 2009

DATA ANALYSIS

Corporation-wide light pollution data will be gathered and analyzed at the Planetarium by a team of students selected from each school.

May 11, 2009,

SCHOOL BOARD MEETING

Analysis of LTBN data and conclusions of light pollution in the PHM Community will be presented to the PHM School Board of Trustees during the first Board Meeting in May.

Scientific Method

- 1. Define the question/problem.**

By how much have we degraded the night sky from its natural state?
How can PHM and the community lessen its impact on the night?
- 2. Gather information (observe) and resources.**

Planetarium visit; www.LetThereBeNight.com; Let There Be Night DVD; recommended books; Orion star charts; Sky Quality Meters.
- 3. Form hypothesis.**

Local outdoor lights have quantifiably brightened the sky throughout the boundaries of PHM. PHM and the community can take several identifiable steps to improve its outdoor lighting.
- 4. Perform experiment and collect data.**

All students observe Orion and contribute their data to the 2009 Globe at Night star count while small teams quantify sky glow from each PHM school with hand-held meters.
- 5. Analyze data.**

During the last two weeks of March 2009, students will share their findings in class and on a school wall map. Online or other digital resources will map the district-wide results, which will be shared and compared with the global community.
- 6. Interpret data and draw conclusions.**

Teachers will guide discussions about the experience; about emerging trends from the data; and about how we prioritize the tradeoffs of outdoor lighting technology. The combined school teams will meet to make recommendations on how PHM can save money and energy while lessening its footprint on the night sky.
- 7. Publish results.**

May 11th PHM School Board meeting; national publications; websites.

Major Supporters:

Toyota TAPESTRY Grant
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P-H-M Educational Foundation
Great Lakes Planetarium Association
National Optical Astronomy Observatory

One Final Comment

With new scientific evidence, Galileo recognized the old model no longer worked. Today, students may discover that our old way of thinking about the nighttime environment no longer works. The next 400 years begin now.