



# 2007 AAAS/Subaru Essay Writing Competition for K-12 Educators, Finalist Essay

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## Meteorology

The study of meteorology in high schools is often relegated to a unit in Earth Science courses. At my school, the last exposure students had to any form of earth science was in middle school. Thus, when we were investigating possible new senior electives that addressed the needs of our non-Advanced Placement students, I created a new course, Meteorology. Because the weather is something that the students observe and experience every day, a conscious decision was made to forego the use of a textbook and develop a hybrid e-learning curriculum, one in which many of the activities are Web-based and utilize real-time weather data. All course information, activities, and necessary links are found on the course website: Atmospheric Science

(<http://www.marymount.k12.ny.us/marynet/StudentResources/science/WCWeb/htm/index.htm>).

Students actively use the Web to analyze maps and decode raw data as they develop an understanding of the physical causes of weather and how these causes impact local and regional weather conditions. Moreover, students develop the skills necessary to compile actual weather forecasts. This includes understanding of the main components of a forecast, analysis of surface and upper air maps, analysis of satellite images and radar composites, and decoding model output statistics and forecast data. Students use these skills in two varied forecasting scenarios.

First, on a weekly basis and as part of a forecasting contest, students are required, before midnight on Thursday, to predict the next day's weather in Central Park in New York City. Students use Web resources and a forecast development guideline sheet to predict the maximum and minimum temperature and quantity of precipitation at Central Park. Moreover, students must support their forecast with appropriate analysis and data as part of their forecast justification. These justifications are submitted on a class wiki and results are posted on a weekly basis on the course website. Each week, each student's forecast justification is assessed for completeness and for the quality of the discussion, not for the accuracy of the forecast.

My students' interest in the forecasting contest is passionate, inspiring, and enthusiastic. Students actively debate their forecasts in the lunchroom and in the hallway. Instant messenger windows pop-up regularly as students challenge each other on their reasoning. Students are quick to seek me out on Friday to find out, "What was this morning's low temperature?" E-mails fly when results are not posted on Saturday morning. Parents report that the contest spurs debate at the dinner table. I even had one parent ask if he could participate! Students cringe when their forecasts are incorrect; they celebrate when they are on the mark! This approach has spurred the class to embrace the study of meteorology, a topic of study not often undertaken by young women!

Furthermore, students in the Meteorology class are responsible for writing, filming, editing, and producing a short "weekend weather forecast" for both our school and our sister school in Los Angeles.



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Students work collaboratively, with one student serving as on-camera reporter, one serving as videographer, and one serving as editor. Using a digital video camera and edited with iMovie, these video forecasts are posted on the course website, with notifications sent via e-mail to students and staff in both schools. Furthermore, using Audacity, students record an audio version, which is also posted on the school website and available for download via subscription on iTunes. Starting last spring, the video forecasts were made available for download.

I work closely with the student team in developing an appropriate script and I review their report for completeness; however, I will not change their forecast. As a result of this project, students learn basic journalism and weather reporting skills, and work on their writing and public speaking skills, as their report is broadcast, in essence, to the world over the Web. Students also use digital media skills, such as editing, videography, lighting, and sound, which they developed in Physics, to produce videos that are engaging, creative, and informative. They quickly learn the skills of being a responsible journalist and a responsible meteorologist and how significantly their report may impact on people's lives. This use of digital video has spurred our sister school in Los Angeles

to produce weekly surf reports, which can be rather enticing during the long, cold days of winter!

The student response to this forecasting project has been positive as well. Students comment that they like the fact that they can perform a task in the group with which they are comfortable; they all do not have to appear on camera. Furthermore, they take pride in their forecast as they are the "point people" in the school for providing current weather information; their teachers look to them in response to the question, "What's the weather going to be like tomorrow?" And, as with the weekly forecasting contest, they cringe when they predict rain for a weekend that turns out sunny or miss the high temperature for a holiday by 10 degrees.

Moreover, the students in the class have expressed interest in producing weekend weather forecasts for all of the schools in our international network of schools. The students readily embrace the challenge that both meteorology and science in general offers. Some students may say that the course is "fun," and that may be true. But what this project has done is to develop in each student a passion for and an interest in science. Most importantly, it has given each student a unique opportunity to shine in a community of life-long learners.