

P2.3

AMS ONLINE WEATHER STUDIES FOR DYNAMIC ONLINE AND LIVE CLASSROOM FORMATS

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There is currently a widespread demand in post secondary education for authentic science courses facilitated on the Internet. An equally important demand is for science courses presented in the classroom that appeal to a generation of students who are linked by cell phone and/or e-mail and are influenced by sound bites and music video. In response to these goals Maple Woods Community College, one of the Metropolitan Community Colleges (MCC) of Kansas City, MO has used the American Meteorological Society's (AMS) Online Weather Studies program for three years in standard first year meteorology courses delivered both in online distance learning and live classroom environments. During that period of time the number of students choosing Meteorology as a physical science has grown numerically from a minimum 15-17 one semester per year to full classes of 28 students in the classroom for Fall semester, 25 students in an Internet course for Spring semester, with additional students requesting admittance.

Online Weather Studies is a packaged meteorology course designed by AMS that enables students to study introductory meteorology through weather data delivered via the Internet and hands-on learning activities based on the current weather. The package includes an Online Weather Studies textbook by Joseph M. Moran, Study Guide by AMS, and AMS Online Weather Studies homepage. The homepage features Online Learning Investigations, posted twice weekly, as an extension of activities in the Study Guide. Current weather maps and continuously delivered weather radar, visible, infrared, and water vapor satellite imagery are provided by COMET (Cooperative Program for Operational Meteorology, Education, and Training, UCAR, Boulder, CO). An online weather summary provides detailed interpretation of weather conditions on the mainland USA, Alaska, Hawaii, and the Tropics. Historical weather affords perspective on weather events by showing the wide range of temperature, precipitation, storms or drought that occurred in the past on the same day as the current weather summary. A bank of learning tools called Extras includes features such as weather map symbols, self-scoring tests, and additional links. An excellent preview of the Online Weather Studies page is at <http://www.ametsoc.org/AMS/>.

The online and in-classroom delivery styles serve distinct student populations. Those taking the meteorology course in the classroom are usually

younger traditional students who commonly live near Maple Woods, whereas those taking the online version of the course may live anywhere in the MCC district or out-of-district. For example students attending classes on campus generally live within a 15-mile radius, but students taking online classes commonly live as far as 60 miles away. However, the same scientific principles and current weather applications are used for both classes. Curriculum standards at MCC require online courses and in-classroom courses to be equivalent in content.

At Maple Woods the online version of the meteorology course is facilitated by the use of WebCt, a course management system, which provides a discussion board and e-mail for distance learners. These tools prevent isolation, allow students to post local weather in an online weather journal, and stimulate students to use all parts of the highly interactive Online Weather Studies homepage that is linked to the class homepage. Replies to assigned discussion by students on the discussion board concerning events in weather history, weather maps, additional weather links, or posts of weather events in student locations enrich the learning experience for each student and the instructor. Students submit their Online Weather Studies activities individually by e-mail. If several students make similar mistakes, the instructor can explain the concept on the discussion board. Dialog between students and instructor may continue until the concept is completely understood. Another advantage of using a discussion board is that students may participate in locations 100 miles apart, so weather postings in an online journal illustrate variations in weather over small areas. Snowstorms or thunderstorms and temperature variations as cold fronts pass through the area are more interesting events as students try to determine where the most prominent change in the weather occurs.

In the classroom setting the AMS course enriches lecture and serves as the laboratory component of the meteorology course. In "Teacher vs. Computer: Where educators stand in the technology revolution," featured in the August 2002 issue of T.H.E. Journal, p. 40, Jacqueline Keane advises instructors to become facilitators rather than dictators and incorporate multiple learning methods in the classroom. In the classroom setting for meteorology my students receive traditional lecture coupled with discussion and collaborate in the laboratory exercises. By the use of the online course in the classroom, I found the reason some questions are missed is because students don't know how to find locations to answer questions correctly. I now encourage students to go to a wall map or take an atlas to their workstations to find locations. Other student problems may be that they are unfamiliar with Internet

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or even computers. Laboratory partners can usually help each other or ask another lab group for assistance. Lab groups are free to compare answers or ask me for further direction. The experience generates debate, searching the web site or links for additional information, and accomplishment as students gain understanding of the topic.

Many students come into a first meteorology course with a preconceived notion that this science course will be easier than other types of science. An average drop rate of 3 students per class is consistent with other science courses I teach. Pretests and end tests for Fall 2001 and Spring 2002 show test scores improved by 10-50% for 58% of the students who took both tests, which taken alone is a discouraging rate of growth. However final exams, taken in a secure testing center, contain short essay questions and diagrams to test application and communication skills concerning the

course. For example, students must describe in detail the life cycle of a fictitious storm recalling weather information that is normally reported, and show the track on a map provided. This short essay and storm track involve recollection and application of many aspects of weather, and students can show their creativity using credible information. Application questions are consistently higher on the final exam than multiple-choice questions on the final. The ability of students to communicate content successfully is perhaps a better illustration than pre and post multiple choice questions to the value of meteorology presented in the Online Weather Studies format. Regardless of age, gender, or ethnicity students comment that current online weather applications help them see the relevance of textbook content and make the principles of meteorology understandable to them.