

Incorporating Standards in Web-based Classroom Instruction

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Abstract: This paper considers the advantages of incorporating learning standards into web-based classroom instruction. State education departments throughout the nation are vigorously promulgating new and more stringent learning standards and their accompanying assessments to stem the tide of unsatisfactory student performance. The Internet is a powerful and attractive learning tool that has the potential to motivate even the most reluctant student. This paper will illustrate how a specific instructional tool, a WebQuest, can effectively deliver standards-based instruction. Examples of outstanding WebQuests are described in detail.

National Standards

The current emphasis on standards-based education began in 1983 with the publication by the National Commission on Excellence of its landmark document, "A Nation at Risk." This report heightened the awareness of the education community to the weaknesses in the American school system and ignited a national debate on ways to rectify the problems highlighted in the report. Subsequent education summits in 1987 and 1996 led many states to establish content area standards (Marzano, 1998). The Clinton administration responded by enacting the Goals 2000: Educate America Act in 1994 which seeks to produce national educational reform by supporting states' efforts to improve student performance (Stedman, 1993). The Act emphasizes educational goals, standards, and assessments as essential elements that must be addressed to improve the state of education in the country (*Goals 2000: Reforming Education To Improve Student Achievement*, 1998). Portions of the Goals 2000 funds made available to states are allocated to an aggressive grants program. Monies from these grants are targeted to promote systemic educational improvements at local levels through programs that address standards-based instruction and assessments, with particular emphasis on technology and collaboration with colleges and universities (*Goals 2000: A Progress Report*, 1995).

Recent reports have indicated that although improvements have occurred, as a nation we could be defined as "still at risk." American students continue to fall short in critical areas such as mathematics and science when compared to their counterparts in other industrialized nations (*A Nation "Still" at Risk. An Education Manifesto*, 1998). Research suggests that school principals throughout the country have made little progress in advancing the use of technology and have failed to relate technology to the National Education Goals articulated in the Goals 2000 legislation (Lunenberg and Irby, 1998).

New York State Standards

Encouraged by educators throughout the nation, today 49 states are currently promulgating rigorous learning standards for K-12 education. New York State's standards are broad statements that define specific competencies and serve as guides for curriculum revision, instructional practices, and assessment instruments. Standards are defined for the following content areas: English Language Arts; Languages Other than English; The Arts; Social Studies; Mathematics, Science and Technology; Career Development and Occupational Studies; and Health, Physical Education and Home Economics. The State distinguishes between a *content standard* that addresses knowledge and skills in content areas and a *performance standard* that indicates how students demonstrate knowledge and skills. These standards are articulated at the elementary, intermediate, and commencement levels. For example, a content standard of the Mathematics, Science and Technology Standard #2 on Information Systems is as follows: "Students will access, generate, process, and transfer information using appropriate technologies." A corresponding performance standard at the elementary level is: "Use newspaper or magazine index in a library to find information on a particular subject." An intermediate-level performance standard is: "Compose letters on a word processor and send them to representatives of industry, government agencies or museums seeking information on a student project." A commencement-level performance standard is: "Join a Listserve and send electronic mail to other persons sharing mutual concerns and interests." These standards seek to improve student achievement from the basics of mastering factual material to acquiring higher order skills such as the ability to solve problems, access and integrate information, apply knowledge to known and novel situations, read and write across the curriculum, become technologically literate, and work cooperatively and independently.

The New York State Assessment System is just as critical as the new learning standards. This system has been designed to replace the existing assessments and to align with the new learning standards. The new assessments must be performance-based, but they can take various formats. They can consist of traditional sit-down, timed tests that have been the staple of prior assessments, or they can take the form of journals or student portfolios. The first assessment was administered in English Language Arts to fourth graders throughout the state in January 1999. A series of assessments in various content areas and grade levels will be phased in over a number of years. The results of the fourth grade test were mixed, with low scores reported in many districts, notable several schools in New York City.

The State has moved to hold districts accountable for meeting standards and New York City Commissioner of Education Rudy Crew has taken these directives seriously. Several district leaders have lost their jobs based on their students' poor performance. Thousands of public school students were forced to attend summer school and to pass tests before being promoted. It is evident that these problems must be addressed through a collaborative effort on the part of teachers, parents, administrators, and teacher preparation programs (Sewall, 1994). It is equally evident that a promising solution path lies in the development of standards-based instructional models in content areas that can creatively and effectively enhance high order thinking skills in our students.

The Internet in Education

The challenge of creating these models within the curriculum content in the elementary and secondary school classroom is a formidable one for many of today's teachers. Many educators have discovered that the power of technology can be one promising means for meeting this challenge. Most schools in the US now have the technology to connect to the World Wide Web as part of regular instruction. According to *Technology Counts '99*, the annual report on educational technology conducted by *Education Week*, more than half of US schools are connected to the Web, and there is one computer for every 5.7 students (Fatemi, 1999). The Web can be a natural vehicle for delivering standards-based instruction to students. Most students are excited about the Internet and are comfortable using it. As such, activities that integrate the use of the Internet are highly motivating for students. Mastering computer technology, including appropriate use of the Internet, is itself one of the required learning standards. Because it provides such a wealth of material in other content areas as well, the Web is a rich resource that teachers can exploit to structure instruction in all curriculum areas.

WebQuests

The WebQuest concept was created in 1995 by Bernie Dodge at San Diego State University. An essential element of a WebQuest is that it provide an inquiry-based activity, using Internet resources (Dodge, 1995). Typically, students begin by reading the WebQuest page, where they are assigned a task that they must complete in several steps. The WebQuest contains links to sites that contain relevant information, often primary sources, that they need to use to complete the project. Because the links provide structure, students are not merely surfing in an unsupervised fashion but rather are visiting sites the teacher has chosen. This screening of sites both ensures that the material is valuable and addresses concerns that educators and parents may have about appropriateness of content. The task is usually a group project, requiring students to use higher order thinking skills such as role playing and problem solving to create a product which may be a multimedia presentation, a brochure, or a performance for parents or classmates.

Iona College Summer Institute

Recognizing that teacher preparation programs must assume an active role in preparing teachers to successfully address the issues of integrating standards and technology into the classroom, Iona College conducted a Summer Institute in Educational Technology with the theme, "Using WebQuests as a Tool for Standards-Based Instruction." This institute was funded in part by a grant through the Goals 2000 program mentioned earlier. The purpose of the Institute was to use technology to meet new standards through development of WebQuests. Participants studied existing WebQuests and evaluated them using a standard instrument. They received instruction in using Netscape Composer as an authoring tool. Keynote speakers discussed topics such as educational theory and standards. Brochures containing the new New York State learning standards in all content areas and grade levels were made available to all participants. In turn, students were required to include a statement of which learning standards were being addressed by their projects. Assessment is an essential part of the new learning standards, and state-wide grading is accomplished by using rubrics which describe characteristics of various levels of achievement. Institute participants were also required to create grading rubrics as part of their WebQuests.

The participants in the Summer Institute produced a number of outstanding WebQuests, all of which can be seen at the course website, <http://www.iona.edu/cs/SummerInstitute/WebQuests.htm>. The grade levels spanned from second to twelfth grades, and subject areas included Social Studies, Chemistry, English and Language Arts, Mathematics, and others. Following are overviews of a few of the projects.

"Celebrating Hispanic Heritage" is a WebQuest whose theme is "Proud to Be Me." Miriam Blake, a principal at a school in the South Bronx with a large number of Hispanic students, created this project. Her objective was to help students develop a pride in their cultural heritage and a better understanding of others. Resources include sites for maps, information about each of the countries in Central and South America, recipes for traditional foods, and other references. Teams of four students each select a country, interview a native of that country, construct a project board to display facts about the geography and culture of the country, give oral presentations, make an audio tape of traditional music, prepare a food dish, and prepare a computer-generated flyer inviting parents and grandparents to attend a cultural day celebration at the school. The grading rubric gives clearly-defined descriptions of performance levels for each of the subtasks. The WebQuest addresses New York State learning standards for eighth grade in Social Studies and English Language Arts. The Social Studies Standard that is addressed is Standard 3: "Geography: Students will use a variety of intellectual tools to demonstrate their understanding of the geography of the interdependent world in which we live--local, national, and global—including the distribution of people, places, and environments over the earth's surface." The English Language Arts Standard that is addressed is Standard 1: "Language for Information and Understanding: Students will read, write, listen, and speak for information and understanding."

"Teenage Drunk Driving" was created by Andrea O'Neill, a teacher of ninth grade at Santa Maria School. Her project, subtitled "The Road Not Less Traveled," presents a scenario in which students plan an intervention for a 16-year old friend, Bobby, who is planning to drink and drive. The task is to prepare a presentation for the annual Students Against Drunk Driving Day at the school which will persuade Bobby

not to drink and drive. Keeping a journal of all activities, students study ads, create a poster, conduct a survey, and create a music video, skit, or commercial to be used in the intervention. Resources include links to sites with general facts about drunk driving accidents, alcohol advertisements, state penalties, Teen ADD, National Highway Traffic Safety Administration statistics, and others. The grading rubric describes various levels of achievement in each of the components of the project. New York State standards addressed are in English Language Arts, Health Education, and The Arts. In English Language Arts, Standard 1 is: "Language for Information and Understanding: Students will read, write, listen, and speak for information and understanding." The WebQuest also addresses Standard 3: "Language for critical analysis and evaluation :Students will read, write, listen, and speak for critical analysis and evaluation." Standard 4 is: "Language for Social Interaction: Students will read, write, listen, and speak for social interaction." In Health Education, the activity addresses Standard 3: "Understand and be able to manage their personal and community resources: Students will understand the influence of culture, media, and technology in making decisions about personal and community health issues. They will know about and use valid health information, products, and services. Students will advocate for healthy families and communities." In the Arts, the WebQuest addresses Standard 1: "Creating, Performing and Participating in the Arts: Students will actively engage in the processes that constitute creation and performance in the arts (dance, music, theatre, and visual arts) and participate in various roles in the arts."

"Issues of Intolerance and Racism" was written by William Sherlog of Rice High School in Harlem. This WebQuest addresses New York State Social Studies Standard 5: "Civics, Citizenship, and Government: Students will use a variety of intellectual skills to demonstrate their understanding of the necessity for establishing governments; the governmental system of the United States and other nations; the United States Constitution; the basic civic values of American constitutional democracy; and the roles, rights, and responsibilities of citizenship, including avenues of participation." Its theme is "Too Much Meanness Messing the Millennium." Students begin by examining the attitudes expressed by Tupac Shakur, Jay-Z, and Martin Luther King, Jr. They study and contrast these with reactions of people in six other occurrences involving prejudice or discrimination, referred to as "Mean Moments". Resources include the web pages of rap artists, speeches and writings of Dr. Martin Luther King, photographs and writings about the Molly Maguires, cartoons from Punch magazine, original sources about the Know-Nothings, an essay and other writings on Sacco and Vanzetti, readings on the case of Korematsu v. United States, the Port Chicago mutiny, and the Trail of Tears. The task involves individual reading and reaction, followed by group research on one of the "moments of meanness", construction of a graphic organizer, and preparation of a music video for the class. The grading rubric covers levels of performance for the essays, charts, lists, and video.

"Tomorrow's Investors: A WebQuest for Social Studies in Grades 10-12" was written by Albert J. Spiegel, a preservice teacher. In this eleven-week project, teams of three students play the role of industry analysts. They are required to monitor an industry and to choose a company in that industry. Learning activities include visiting the company's website, following the stock prices daily, seeking out news stories about the company, and following news reports about the economy. Students must prepare and deliver an oral presentation about the company and construct spreadsheets depicting the stock's performance. This WebQuest addresses New York State Standards for Education in Social Studies and English Language Arts. In Social Studies, it addresses Standard 4: "Economics: Students will use a variety of intellectual skills to demonstrate their understanding of how the United States and other societies develop economic systems and associated institutions to allocate scarce resources, how major decision-making units function in the United States and other national economies, and how an economy solves the scarcity problem through market and nonmarket mechanisms." It addresses English Language Arts Standard 1: "Language for Information and Understanding: Students will read, write, listen, and speak for information and understanding." It also addresses Standard 3: "Language for critical analysis and evaluation: Students will read, write, listen, and speak for critical analysis and evaluation." In Mathematics, Science and Technology, it addresses Standard 2: "Students will access, generate, process, and transfer information using appropriate technologies."

Conclusion

Standards-based education and assessments are receiving nationwide attention. Relating technology to educational goals can be a daunting task for teachers. The WebQuest template is an effective means of addressing both learning standards and technology integration. The rich resources of the World Wide Web can be used for developing standards-based instruction across the curriculum. We have described how training in the development of WebQuests can enable teachers to develop instructional projects that address standards while making effective use of technology.

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