

Inquiry Based Learning Using the Internet: Research, Resources, WebQuests

Maureen Brown Yoder, Ed.D.
Professor, Lesley University

Inquiry-based and constructivist activities can invigorate teaching and motivate students to take charge of their own learning, understand multiple perspectives, and develop high level reasoning skills. Research shows that project-based activities improve student understanding and retention of knowledge. The objectives of this paper are to provide participants with a theoretical background and practical applications of constructivist teaching. How can the writings of Socrates, Bruner, Dewey, and other educational theorists contribute to our body of knowledge and understanding? Participants will see outstanding examples of Internet activities, including the compelling nature of a WebQuest challenge. Since 1995, WebQuests, developed by Bernie Dodge, have evolved into a classroom phenomenon, used in primary grades through college. They consist of a challenge, often to solve a real life problem or create an original project, using carefully selected Internet resources and specific parameters. Examples created in online courses, by in-service teachers, will be demonstrated. Participants will explore how WebQuests promote structured inquiry and presentation of new knowledge.

Inquiry-Based Teaching Has Foundations in Early Educational Theory

Socrates (469-399 B.C.E.) encouraged the youth of Athens to ask questions. The Socratic Method includes several components that are evident in today's efforts to promote inquiry. Participants are encouraged to reflect and think independently and critically. The Socratic Method is practiced in small groups with the help of a facilitator. It involves reaching a consensus, not as an aim in itself, but as a means to deepen the investigation.

John Dewey (1859-1952) once said that "Skepticism" was the mark "of the educated mind" and that "It requires troublesome work to undertake the alternation of old beliefs. Self-conceit often regards it as a sign of weakness to admit that a belief to which we have once committed ourselves is wrong." Today, teachers encourage students to question previously held beliefs while having to question their own belief systems.

A major theme in the theoretical framework of Jerome Bruner 1915- is that "learning is an active process in which learners construct new ideas or concepts based upon their current/past knowledge." Students "go beyond the information given". A constant theme in Bruner's work is that education is a process of discovery.

Socrates, Dewey, Bruner, and other educational theorists paved the way for many of the current trends. Students in classrooms where inquiry is valued and encouraged are asked to question previously held beliefs and construct their own belief systems.

The Origins of a WebQuest

"A WebQuest is an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the Internet." WebQuests are designed to use learners' time well, to focus on using information rather than looking for it, and to support learners' thinking at the levels of analysis, synthesis, and evaluation. They were developed by Bernie Dodge and Tom March in 1995.

The part of a WebQuest (adapted from <http://webquest.sdsu.edu/webquest.html>)

Copyright 2005 The Board of Regents of the University of Wisconsin System.
Duplication or redistribution prohibited without written permission of the author(s)
and The Annual Conference on Distance Teaching and Learning
<http://www.uwex.edu/disted/conference/>

Introduction

To prepare and “hook” the student

Task

What the student is going to do

A description of the culminating performance or product

Process

How the learners will accomplish the task

Clear steps to accomplish the tasks

Tools and resources they will need to gather and organize information

Evaluation

Criteria needed to meet performance and content standards

Conclusion

To bring closure

To encourage reflection

Teacher’s Page

Information to help other teachers implement the WebQuest:

Targeted learners

Standards

Suggestions for teaching the unit

Sample student work (sometimes)

A good WebQuest will incorporate the elements listed and described below.

Motivation and Questioning

In a inquiry-based classroom environment, teachers are encouraged to motivate students by asking intriguing questions and presenting compelling scenarios. They challenge students to go beyond information retrieval and analyze and synthesize information. WebQuests begin with a compelling scenario that motivates students, and includes questions that require research and analysis to answer.

Authentic and Dynamic Resources

The resources that are used by students to answer questions range from the traditional – books, journals, other printed materials - to the electronic – Internet Web sites, CD ROMs, DVDs. World Wide Web resources are relevant and timely. Current journals, newspapers, and television stations all have Web sites that are updated frequently. Government, educational, and health organizations are popular and useful sources of information.

There are also communication and collaboration opportunities available, both commercial and private. Writing projects, scientific data collaborations, and commercial, virtual explorations are among the most popular and relevant to student projects.

Primary sources such as drawings, photographs, maps, and diaries are available online. Letters from family members and soldiers from war times add a personal understanding beyond the dates and statistics. Real time data such as weather and financial information is easily available.

Not all information gathering is electronic or print related. Students also can gather information by conducting interviews with local experts, and family and community members.

Creating and Demonstrating New Knowledge

The most productive and worthwhile inquiry-based activities, including WebQuests, require students to gather data but go beyond simply reporting their findings. When students are asked to analyze their findings then compare, contrast and rethink them a more sophisticated level of knowledge develops. When they relate them to personal experiences, retention increases. When they are asked to create something original, to construct some sort of new knowledge, then the educational experience is one that is a true constructivist activity.

What Is a Good Question?

A “yes” or “no” answer is not sufficient.

Students are intrigued with and challenged by the question.

It requires some research; some additional information to inform the answer.

The answer requires analysis of information

Students can demonstrate their learning in a variety of ways

Creating and Demonstrating New Knowledge

Survey results on data gathering and analysis can be demonstrated by showing reports with graphs and slide shows. New knowledge can be shared in the form of publications and writing activities. Sometimes the culminating activity in a WebQuest is a Web site, a TV/radio show, a newsletter, a mock trial, a travel brochure, a letter writing project, a journal, or a time capsule. Some classes plan a community service activity. It could be a fundraiser, or an environmental or educational effort. Many students do well when asked to produce an artistic creation which could be a mural, a poem, or a musical or theatrical production.

Conclusion

WebQuests incorporate the elements of inquiry-based and project-based learning. Readers are encouraged to visit <http://webquest.sdsu.edu/webquest.html> and explore the examples provided.

Biographical Sketch

Maureen Brown Yoder is a Professor in the Technology in Education program at Lesley University, Cambridge, MA. She has been the Program Director of the Online Masters Degree Program in Technology in Education since 1997. She teaches courses in multimedia and educational uses of the Internet using a constructivist and project based approach. She has incorporated the use of WebQuests in her classes since their development in 1995, and, in 1999, her article on The Student WebQuest was published in Learning and Leading With Technology.

<http://www.lesley.edu/faculty/myoder/webquest.pdf> She has an Ed.D. in Educational Media and Technology from Boston University.

Address: Lesley University
29 Everett St.
Cambridge, MA 02138
E-mail: myoder@mail.lesley.edu
Phone: 617.349.8421

Dr. Yoder's most recent presentations on constructivism and WebQuests include:

"Using WebQuests to Promote Cultural Understanding: Exemplary and Replicable Examples", National Education Computing Conference, Seattle, WA. June, 2003.

Invited Speaker, "Socrates? Web Page? An Email from Piaget? How Important Thinkers Would Use Current Technology: An Instructional Technique" and "Constructivist Teaching Using the Internet: Supporting Theory, Exemplary Examples, and Outstanding Resources for Developing Customized Webquests", 2003 International Conference on Innovation in Higher Education, Kiev, Ukraine, May, 2003.

"Inquiry-based Learning and Technology: Using the Internet to Enhance and Invigorate Your Teaching" The Science, Technology, Engineering, and Mathematics Education Institute, University of Massachusetts, Amherst, MA. April, 2003.

"Enhancing Inquiry-Based Learning With Technology: Resources, WebQuests and Emerging Strategies", The International Conference on College Teaching and Learning, Jacksonville, FL. April, 2003.

"Constructivist Teaching Using the Internet: Supporting Theory, Exemplary Examples, and Outstanding Resources for Developing Customised WebQuests" ASCILITE The Australasian Society for Computers in Learning in Tertiary Education, Auckland, New Zealand, December, 2002

"Online Professional Development Panel" Massachusetts Computer Using Educators - MassCUE Conference. Sturbridge, MA. November, 2002.

"Inquiry Based Learning and WebQuests: Current Research, Outstanding Resources, and Exemplary Examples" E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare & Higher Education, Montreal, Canada, October, 2002.

"Inquiry-based Learning, Constructivism, and Technology: If Socrates, Piaget, and Dewey had Web pages, what would they look like?" Seventh Annual Academic Technology Institute, Lesley University, Cambridge, MA, September, 2002.

"WebQuests, 2002: An Update - Research, Resources, and Outstanding Examples" National Educational Computing Conference. San Antonio, TX. June, 2002.