

Running head: WEBQUEST POLICY IN EDUCATION

WebQuest Policy in Education

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Introduction to WebQuests

With the advent of Internet access in the classroom in the early 1990's, teachers began using the web to aid in their instruction. As technology becomes more prevalent in the classroom, teachers are finding new ways to use technology to enhance their students' learning. WebQuests, online modules that paved the way for teachers to have a structured way to integrate the Internet into the curriculum, allow students to answer their own questions simply by accessing other resources.

“Developed in 1995 by Bernie Dodge and Tom March at San Diego State University, a WebQuest is an inquiry-oriented activity that requires students to use the Internet to find information and solve problems” (O'Bannon, 2000). Since the conception of the WebQuest, Dodge has continued to perfect the definition of what a WebQuest is and how its use affects student learning. The motivation behind a WebQuest is for teacher to have a more structured way for students to use the web as a learning tool. WebQuests possess six attributes. “These attributes are introduction, task, process, resources, evaluation, and conclusion” (O'Bannon, 2000).

“The introduction presents the learner with some background information for the activity. It should motivate the learner to want to know more...The task explains to the learner what is expected at the completion of the activity...what is the expected outcome...The process is a detailed, step by step, description of the procedure needed to accomplish the task...A collection of resources needed to accomplish the task are presented. The majority of these should be resources from the web even though other resources are acceptable...Guidance to the learner can include tips on how to organize the information once it is gathered and how the activity will be evaluated. Evaluation rubrics are often a good source to guide the

process...A conclusion brings closure to the activity. This section may include a summary of what has been learned and/or some ideas for extending the activity” (O’Bannon, 2000). Through these six attributes, “a WebQuest facilitates the acquisition, integration, and extension of a vast amount of information through tasks specifically designed to engage the learner in analysis and demonstration of understanding” (Johnson & Zufall, 2004). Dodge continues to use WebQuests produced by other educators and students to re-examine what makes a WebQuest such an advantageous teaching tool. In this paper, I will examine how WebQuests affect students’ comprehension and learning of the material presented to them by using Bertram Bruce and James Levin’s taxonomy for “Media for Inquiry, Communication, Construction, and Expression” (1997) (see Appendix A). In essence, a WebQuest attempts to take a great deal of information and capture the attention of the learner so that learning is made more enjoyable.

When conducting research for Phase One of this project, I found that many teachers within the school that I studied viewed technology as important and use it at least once a week (Brubaker, 2005). One teacher uses WebQuests in her advanced reading class for sixth graders. She found that the WebQuests not only provide a way for students to learn interactively, but also provides access to information and resources that are not available when using traditional methods of instruction. Even though this teacher knows how to use technology in her classroom, not every teacher is equally proficient and enthusiastic about technology. If a teacher decides to use technology, there is a support staff and other services available to assist teachers with technical issues and in integrating technology into the curriculum.

Student Issues

“A real WebQuest is a scaffolded learning structure that uses links to essential resources on the World Wide Web and an authentic task to motivate students’ investigation of an open-ended

question, development of individual expertise, and participation in a group process that transforms newly acquired information into more sophisticated understanding” (March, 2003). “Scaffolding essentially means doing some of the work for the student who isn't quite ready to accomplish a task independently. Like the supports that construction workers use on buildings, scaffolding is intended to be temporary. It is there to aid the completion of a task and it is eventually removed” (Dodge, 1998). A scaffold is one of the most important parts of a WebQuest because it is essentially the framework that students need to begin their learning process. The scaffold sets the grounds for the inquiry. By using the scaffold provided by teachers, students have access to a wealth of information at their fingertips. And, at the same time, teachers do not have to concern themselves with students accessing inappropriate material or wasting precious class time viewing irrelevant content. Through scaffolds, teachers set up a way for students to learn while not giving them all the answers. Policies should be set for what is sufficient scaffolding for students to effectively learn content.

Most WebQuests take advantage of digital media, such as web pages, video, audio, and photos, available through the computer. Many teachers perceive students becoming passive in the learning process when they use visual media as the primary means of instruction. Teachers find this undesirable because they want their students to be engaged in their learning. If students become passive, the information being presented is not transforming to knowledge. “Many educators believe that when students are engaged in a visual learning activity, the learning is often passive, not personal or interactive. The dominant teaching style in traditional classrooms then remains teaching by telling” (McNierney, 2002). A key element in designing a successful WebQuest is using appropriate digital media to create a module in which students are forced to transform information into knowledge. Successful WebQuests do not allow students to simply

go through the motions.

Teachers must also deal with more special needs students in their classroom. Teaching students of all ability levels without holding some students back or pushing others beyond their limit. Rebecca Kelly states that WebQuests are advantageous in a mixed abilities classroom in two ways: “First, teachers can address goals of the individualized education program (IEP) to focus on accommodations and modifications to support the child’s success in the general curriculum” (Goldberg as cited in Kelly, 2000). These accommodations can be anything from making the text larger to providing simpler instructions. “Also, because schools and teachers are required to help the child be involved in and progress within the general education curriculum, the WebQuest format offers the opportunity to incorporate basic skills with higher-order thinking skills and other enrichment activities with peers without disabilities” (Kelly, 2000). WebQuests help teachers guide students without disabilities to greater understanding of content because of the ability to provide more one-on-one instruction time. Schools and teachers need to understand the differences of individual students and how WebQuests should to be appropriately adapted for all students to learn content at their own level and pace. As a policy, schools need to set standards for adaptations that are necessary for all students.

WebQuests are desirable in the classroom because they engage students in learning. “WebQuests engage students curiosity and often increase their motivation to learn to make conceptual connections that are related for example to a particular topic, theme, or problematic situation” (McNierney, 2002). Since WebQuests use the power of the interconnectivity of the web and digital media of the computer, students are often more curious about what they can learn. Since the information is being presented differently than the commonly accepted, didactic, unexciting lecture presented by a teacher, students are intrigued by the new presentation of

information. “Consequently, the WebQuest activity is a useful tool for enhancing the development of transferable skills and helping students to bridge the gap between school and “real world” experiences” (Watson, 1999). Because of the way that WebQuests connect to the world via the web, students learn about real world application. Teachers also learn new ways to make the desperately sought home-school connection to engage their students in real world learning.

Teacher Issues

WebQuests are also very useful for teachers. WebQuests not only provide another teaching powerful tool, they also can provide teachers opportunities for professional development (Johnson & Zufall, 2004). “WebQuests can be especially useful for teachers who are novices in the area of technology in that they offer prepackaged, self-contained lessons ready for implementation” (Watson, 1999). Because complete WebQuests are available to educators, teachers can focus more on content instead of the technical issues. However, as teachers become more comfortable with technology and better understand how to use it, they should begin to adapt the WebQuests to achieve their goals and objectives.

For teachers, the WebQuest also offer a form of professional development. “The most important part of the WebQuest experience is that educators spend quality time with the resources presented in the WebQuest, digest what they have learned, and apply their new understanding to worthwhile tasks” (Ertmer, Lehman, Park, Cramer, & Grove, 2003). The teacher is given the opportunity to learn about various topics and issues and then apply that knowledge and information to other areas of their teaching. “WebQuests are another way for teachers to use the convenience and vast resources of the Internet to gain professional knowledge without leaving their classrooms” (Ertmer, Lehman, Park, Cramer, & Grove, 2003). Educators

should not rely so heavily on technology that it becomes their only means of professional development. But educators can use the advancements in technology to “take advantage of many more opportunities via the Internet to achieve their professional goals” (Ertmer, Lehman, Park, Cramer, & Grove, 2003). The Internet is laden with opportunities for professional development. Schools should understand this power and harness it to extend their instruction and develop student learning.

Implementation Issues

However, as technology changes the face of education, it is important that technology is not over-emphasized so that it leaves the traditional methods of instruction seemingly outmoded. “Because of the complexities of pedagogies demanded by learner-centered approaches (which may, in fact, be exacerbated by the use of technology), more meaningful professional development experiences are needed” (Ertmer, Lehman, Park, Cramer, & Grove, 2003).

One of the largest obstacles in bringing WebQuests into the classroom is the issue of technology in the classroom. “There is an increasing number of computers in schools and Internet connectivity is becoming commonplace” (Fiedler, 2002). In recent years, computers and Internet connectivity have become much more prevalent in schools and in students’ homes. It has provided the school the ability to bring more resources to the classroom and provide teachers with easier access to those resources. “Technology readily plays a supportive role as a tool for gathering information, analyzing and representing data, and communicating results” (Ertmer, Lehman, Park, Cramer, & Grove, 2003). As more grants become available and school corporations begin allotting more funds to technology implementation and enhancement, board members and district superintendents are beginning to see the many benefits of having this

resource. Through the implementation of technology into the classroom, schools have become better connected with other schools, students, teachers, and institutions throughout the world.

Once technology is available in the classroom, it is rather difficult for teachers to integrate that technology into their curriculum and into their teaching. Teachers often lack the professional development necessary to refine those skills. However, it is advantageous for teachers to implement technology into their classroom because the technology expands their ability to meet the needs of all students by providing more varied instructional strategies to each student.

WebQuests are one way that teachers can integrate technology into their instruction. “WebQuests add to the instructional and learning environment for the student because of the non-traditional approach to teaching as well as encouraging students to use higher-order thinking skills to achieve the tasks” (McNierney, 2002). Research has proven that through the use of the WebQuests, students are engaged in their learning and are more encouraged to think more deeply about subjects. Schools should continue to apply new research to their instruction and implement that into their curriculum. They should also seek to use professional development as a means of testing research theories and also conducting their own research.

“However, classroom teachers often complain that time spent on the Internet is risky business. Irresponsible use of the web is a genuine concern. Not only can learners waste precious instruction time surfing the web but also access...[abundant] questionable information... Additionally, anxiety, related to proficiency testing, limited access to and knowledge of computers, and restricted connect[ion] time, increase teacher resistance to integrating the Internet with curriculum” (O’Bannon, 2000). Acceptable use of the Internet has been an issue from early on. Most acceptable use policies are signed with the understanding that students will use the

technology for educational purposes and if they violate these policies, their access privileges will be revoked. All of these factors can be avoided if the necessary measures are taken to prevent these actions from occurring. “WebQuests counter these barriers by offering a structured format in which students participate in the retrieval of information to construct learning” (O’Bannon, 2000).

One of the biggest reasons to implement WebQuest use in the classroom is because of the ever-changing nature of this technology. “Rather than being a static body of content to be taught, a WebQuest is an evolving body of content to know, to explore, and to process” (Watson, 1999). A WebQuest is much different from a textbook that remains the same each time it is opened. With a WebQuest, the information is easily updated and draws upon other sources to support its structure. Through the use of hyperlinks, WebQuests can access information at the click of a button and bring new and updated information to the learner within seconds.

Curriculum Issues

Technology integration into curriculum has presented many issues. “Although access to the Web is relatively simple, integrating it into the curriculum to enhance teaching and learning and teaching is not” (O’Bannon, 2000). Simply providing Internet access to the classrooms does not mean that WebQuests are easily integrated into the curriculum. Teachers need to be able to use technology to enhance their instruction and students need to be able to use that technology to enhance their learning. The school needs to set standards for how often teachers and students are expected to use technology, the appropriate timeframe or situation to use the technology, and what is appropriate content to be viewed. “Rather than using the web to collect a hodge-podge of facts and opinions, this engaging, inquiry-based approach to teaching and learning promotes the kind of meaningful and authentic learning experiences that achieve the high-level of student

thinking educators have sought for decades” (Lamb & Teclehaimonat, 2005). A WebQuest is designed for students to be asked questions and then to answer those questions with the resources provided to them primarily via hyperlinks.

Many teachers have difficulty with allowing the computer to become the primary means of information gathering and dissemination. Until now schools have been allowed a fairly firm hold on the content entering into the classroom. With WebQuests, students are allowed access to a tool that connects them to information sources throughout the world. Even though the WebQuests have specific links and scaffolds which students are expected to follow, the risk of accessing inappropriate content still exists. “Computer based instruction is instruction in which the computer acts as the teacher by presenting new information and guided practice” (Lord). Teachers struggle with the thought of the computer being the chief object that students use to learn the materials presented. However, teachers must realize that when WebQuests are successful, there is an important change. “In a real WebQuest, newly acquired information undergoes an important transformation within learners themselves” (March, 2003). This is an example of knowledge integration that is found under the theory-building category of the Bruce and Levin Taxonomy.

Teachers need to make sure that the information is presented in such a way that students cannot simply regurgitate the information without any real processing of or thinking about the information. Teachers want the information presented in the WebQuest to become student knowledge so that student learning can be assessed. “A high-quality WebQuest usually requires learners to transform information into something else such as a recommendation synthesizing conflicting opinions, proposing a solution that works within constraints, or taking a stance and

defending it” (Fiedler, 2002). Schools need to set standards for what is appropriate content for both the teachers to use in instruction and also for what students can produce for assignments.

Teachers also want to make sure that the information being presented is as accurate as possible. “A quick litmus test for the WebQuest’s group process is to ask two questions. First we ask, could the answer be copied and pasted? If the answer is no, we then ask, does the task require students to make something new out of what they have learned? Students must develop a substantively new concept and product, not merely provide a new compilation of information or an “original” mishmash of unprocessed facts” (March, 2003). Students need guidance in taking their current knowledge to a higher level of understanding by using the information presented to them and changing it into knowledge, comprehension, and understanding that can be applicable in real world situations. Students need to be guided in taking their current knowledge to a higher level of understanding. The information being presented to the student needs to change from information to knowledge. It is up to the format and activities in the WebQuest determine how effectively that transformation occurs.

Policy Issues

Because WebQuests are “a learner-centered approach to teaching, WebQuests draw on the following areas: constructivist philosophy; thinking, understanding, and transformational learning; authenticity and situated learning environments; inquiry-based learning; scaffolding; differentiation; cooperative learning; motivation; and motivation, challenge, and engaged learning” (Lamb & Teclhaimonat, 2005). The learner is the receiver, interpreter, and analyzer of the information. For that reason, it is essential that the information be presented in such a way that students can comprehend the information and then understand that information can be used to translate into knowledge.

WebQuests may be characterized differently depending on one's perception of the information and the format in which it is presented. "WebQuests may be labeled inquiry-centered or problem-centered learning by some, while others may view them simply as activities that provide students the freedom to learn by accessing multiple resources. However they are characterized, WebQuests are reflective, fluid, and dynamic" (Watson, 1999). Regardless, their characterization, teachers must realize that WebQuests are part of the Internet and will consequently be in a continuous state of change. They are not static like textbooks. A WebQuest has access to up-to-date information that is current and easily accessible. "Technology use in education settings must be based on its ability to support rather than determine desired outcomes. The aim ought be uncovering *what technology should be doing and how we should be using it* in order to prepare learners who are independent and mindful thinkers able to solve complex problems" (Kortecamp & Anderson Steeves, 2002). "In districts across the country, teachers have been trained in operating systems and office software suites, only to discover that it's really "not about technology." The real skills that teachers need revolve around new modes of teaching and learning—*supported* by technology. Such application of technology in the context of standards-based learning requires a continuum of high-level proficiencies on the part of educators" (North Central Regional Electronic Laboratory, 2005).

Relationship to the Taxonomy

WebQuests are an interactive way for students to learn content. The students become intrigued by the interactive format and the medium in which the information is presented. Consequently, learners are more curious about the information and see the WebQuest as a fun way to answer the proposed questions. Once their attention has been captured, the WebQuest then takes advantage of the opportunity to engage students in meaningful and constructive

learning activities. Eventually, the students, without being directly instructed, use models of inquiry to develop their own learning through a constructivist point of learning.

The taxonomy developed by Bruce and Levin provides a classification system for the uses of educational technologies. The taxonomy, based on John Dewey's ideas of the greatest educational resources of children, uses a constructivist view of learning (Bruce & Levin, 1997). The first category in the taxonomy is Media for Inquiry. Bruce and Levin use this to build on the belief that media can be used for inquiry-based learning. Since a WebQuest is based mostly on inquiry, this application of using media for inquiry is very prominent in the learning module.

Media for Communication is the second category in which Bruce and Levin suggest that media can be used to communicate information. WebQuests provide information to students that transforms simple knowledge into a complex web of understanding. An underlying goal of a WebQuest is that the information is presented in such a way that it transforms into retained knowledge.

Media for Construction entails the idea that media can be use to build new media-rich "things." The "things" being built can include anything from creating a slide for a presentation to physically constructing something. Students utilize this characteristic of learning because it provides the real world application that most students need to learn material effectively. When concepts are stretched and applied in real world application, students are more likely to understand the content, learn the material, and construct their own understanding of the materials based on their own previous knowledge.

Using media for expression is entailed in the final category of Media for Expression. Students can use media to describe how they are feeling, to communicate what they want to

articulate, or even to change how they perceive something. They use the products of their WebQuests as a way to express their thoughts, emotions, and feelings.

Through the use of WebQuests teachers have access to a teaching tool that is constantly changing. WebQuests can be updated collaboratively, so students can get multiple points of view on a variety of subjects. Students can learn much from this tool because it presents information in a way that is more intriguing to them and peaks their curiosity so they want to learn more information about the given topic. It is important that this information be presented and used in such a way that the student is forced to think about the material in a new and varied way. The information must transform into knowledge that the student can use later in real world situations.

Media for Inquiry, Communication, Construction, and Expression play a key role in the evaluation of the effectiveness of WebQuests. As WebQuests continue to evolve through the efforts of other teachers updating and testing new concepts, the teaching tool will become a more refined and well-defined method of instruction. With the use of WebQuests in the classroom, it is the hope of all that learning becomes fun and exciting while remaining effective and practical at the same time.

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Appendix A

Bruce and Levin's Taxonomy

A. Media for Inquiry

1. **Theory building—technology as media for thinking**
 - Model exploration and simulation toolkits
 - Visualization software
 - Virtual reality environments
 - Data modeling—defining categories, relations, representations
 - Procedural models
 - Mathematical models
 - Knowledge representation: semantic network, outline tools, etc.
 - Knowledge integration
2. **Data access—connecting to the world of texts, video, data**
 - Hypertext and hypermedia environments
 - Library access and ordering
 - Digital libraries
 - Databases
 - Music, voice, images, graphics, video, data tables, graphs, text
3. **Data collection—using technology to extend the senses**
 - Remote scientific instruments accessible via networks
 - Microcomputer-based laboratories, with sensors for temperature, motion, heart rate, etc.
 - Survey makers for student-run surveys and interviews
 - Video and sound recording
4. **Data analysis**
 - Exploratory data analysis
 - Statistical analysis
 - Environments for inquiry
 - Image processing
 - Spreadsheets
 - Programs to make tables and graphs
 - Problem-solving programs

B. Media for Communication

1. **Document preparation**
 - Word processing
 - Outlining
 - Graphics
 - Spelling, grammar, usage, and style aids
 - Symbolic expressions

- Desktop publishing
- Presentation graphics
- 2. **Communication—with other students, teachers, experts in various fields, and people around the world**
 - Electronic mail
 - Asynchronous computer conferencing
 - Synchronous computer conferencing (text, audio, video, etc.)
 - Distributed information servers like the World-wide Web
 - Student-created hypertext environments
- 3. **Collaborative Media**
 - Collaborative data environments
 - Group decision support systems
 - Shared document preparation
 - Social spreadsheets
- 4. **Teaching Media**
 - Tutoring systems
 - Instructional simulations
 - Drill and practice systems
 - Telementoring

C. Media for Construction

- Control systems—using technology to affect the physical world
- Robotics
- Control of equipment
- Computer-aided design
- Construction of graphs and charts

D. Media for Expression

- Drawing and painting programs
- Music making and accompaniment
- Music composing and editing
- Interactive video and hypermedia
- Animation software
- Multimedia composition