CHAPTER 9
STUDENTS AS SEEKERS OF KNOWLEDGE

This chapter will assist you

In meeting the ISTE NETS•T

II. PLANNING AND DESIGNING LEARNING ENVIRONMENTS AND EXPERIENCES.

Teachers plan and design effective learning environments and experiences supported by technology.

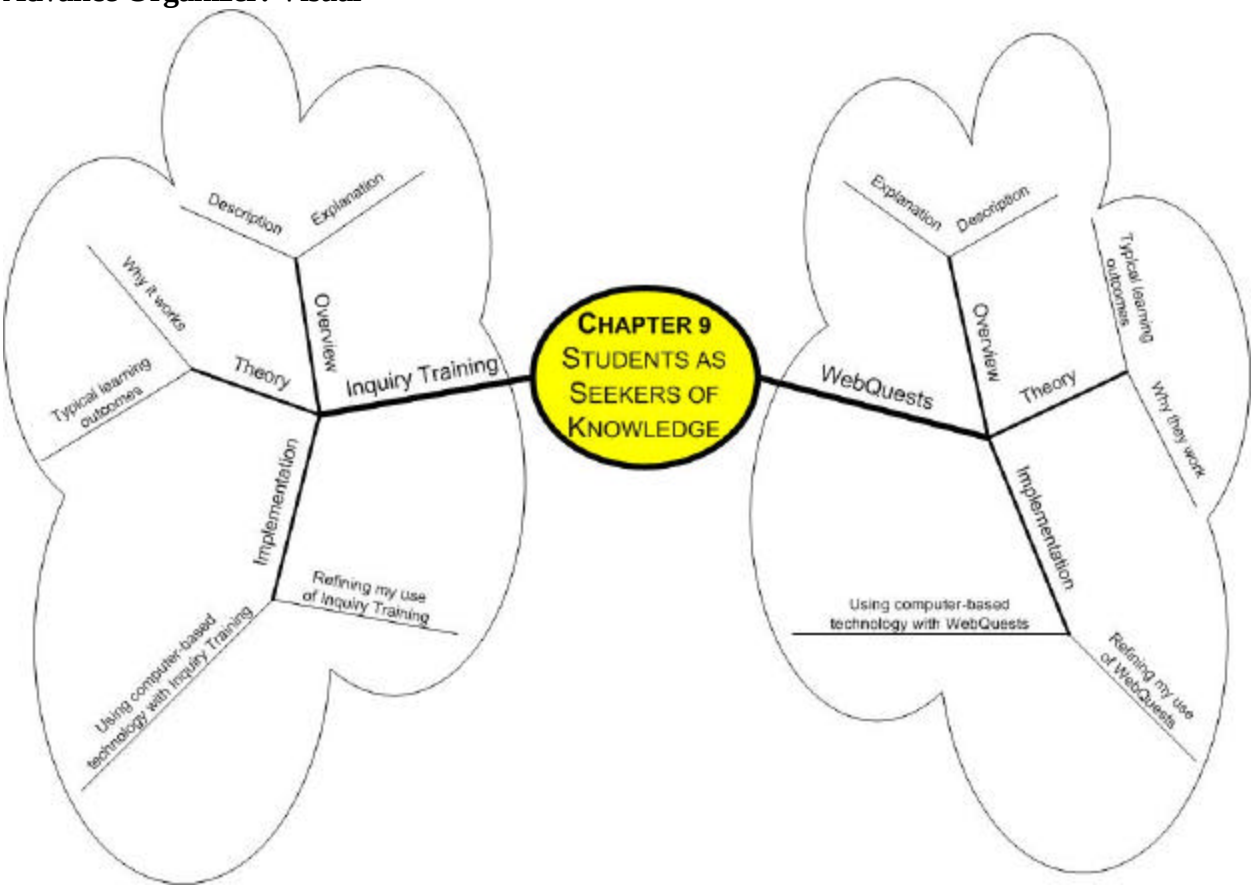
III. TEACHING, LEARNING, AND THE CURRICULUM.

Teachers implement curriculum plans, that include methods and strategies for applying technology to maximize student learning.

IV. ASSESSMENT AND EVALUATION.

Teachers apply technology to facilitate a variety of effective assessment and evaluation strategies.

Advance Organizer: Visual



Advance Organizer: Guiding Questions

1. After reading Part 1 **[deleted]**

After reading Part 2 of this chapter you should be able to answer the following questions:

2. What is a WebQuest?
3. What does a WebQuest lesson look like?
4. Why do WebQuests work?
5. What are the typical learning outcomes for WebQuests?
6. How can I shape and refine my use of WebQuests?
7. How can I utilize computer-based technology with WebQuests?

Part 1 – Inquiry Training

[Deleted]

Part 2 – WebQuests

Question & Answer with a K-12 Teacher:
Rebecca Harrison is a middle school teacher who primarily teaches social studies. Her school has a predominately Hispanic population in a lower socioeconomic area of suburban Los Angeles. Her typical class size is 32 students. We asked her a few questions about how she uses WebQuests in her classroom and what advice she has for teachers using WebQuests.

Q. How do you use WebQuests in your classroom?

Rebecca: With only two computers in my classroom, I can't use WebQuests exactly as I would like. I'd love to be able to have all of my students in groups of three or four working at their own computer at the same time. I'm dreaming – I know. So, I mainly use WebQuests as independent activities that supplement the content and instruction that I provide my students. I normally have students work in pairs to complete the WebQuest activity.

Q. Can you give an example?

Rebecca: Sure. We are about to finish a unit on ancient Greece. We have been studying the different elements of ancient Greek culture. I have a WebQuest that students will go through in pairs to become experts in a particular area of Greek culture. The pairs will put together a summary report of what they discovered. They will then compare their discovery with their own culture to determine similarities and differences. The final product will be a chart they develop with this information that they share to the rest of the class.

Q. What advice can you give to other teachers who might be thinking about using WebQuests?

WebQuests are pretty straightforward to use. I do suggest that teachers go through one on their own first to become familiar with how they work and to get a sense of what their students will need to do. I also suggest that teachers have their students work in pairs or small teams. I have to because I have

limited computers in my classroom. And, I guess my final piece of advice is that you should look for WebQuests that can be used by your students with very little guidance from you. Students should be able to complete a WebQuest without you guiding them through every step.

What is a WebQuest?

A WebQuest is a variation of the project-based learning approach that has been adapted to the unique environment of the World Wide Web. WebQuests may require students to develop both foundational- or higher-level knowledge. WebQuests are a relatively new instructional approach, being introduced in 1995 by Bernie Dodge and Tom March (Dodge, 2001).

A driving force behind the development of the WebQuest model was the need for teachers to develop web-based learning activities that (1) focused on important learning and (2) made efficient use of each student's available Web "connect time" (Dodge, 1997). This clarity of focus and efficiency of technology use is needed by both students and their parents. For students, it answers their questions about the value of the task they have been asked to do (Marzano, Pickering, and others, 1997); for parents, it assures them that their children are not engaged in indiscriminate "surfing" of the World Wide Web (Yoder, 1999).

The WebQuest strategy is based on the Dimensions of Learning framework (Marzano, 1992; Marzano and Pickering, 1997). While WebQuests incorporate thinking processes from all five dimensions of the framework, most WebQuests emphasize the thinking processes found in Dimension 3: *Extending and Refining Knowledge* and Dimension 4: *Making Meaningful Use of Knowledge* (See Figure 9.5 for a quick overview of Dimensions of Learning).

Insert Figure 9.5 About Here

Some web-based instructional activities that are labeled "WebQuests" are actually treasure hunts or scavenger hunts instead. A treasure/scavenger hunt is simply a list of questions that can be answered by browsing specific websites. All authentic WebQuests share the following critical attributes:

1. An **introduction** that sets the stage and provides some background information.
2. A **task** that is doable and interesting
3. A set of **information sources** needed to complete the task. Many (though not necessarily all) of the resources are embedded in the WebQuest document itself as anchors pointing to information on the World Wide Web . . .
4. A description of the **process** the learners should go through in accomplishing the task. The process should be broken out into clearly described steps.
5. Some **guidance** on how to organize the information acquired .
6. A **conclusion** that brings closure to the quest, reminds the learners about what they've learned, and perhaps encourages them to extend the experience into other domains. (Dodge, 1997)

Dodge (1997) also identifies the additional non-critical attributes that are shared by many, but not all, WebQuests.

1. Activities in the WebQuest are based on **cooperative learning groups**.

2. **Motivational elements**, such as assigned roles and mini-simulations, are included in the design.
3. The WebQuest is based on an **interdisciplinary design**. (Most beginning WebQuest designers focus on the single discipline design.)

What does a WebQuest lesson look like?

Most of the strategies presented in this textbook present a series of steps or phases for the delivery of instruction. However, since a WebQuest is a project-based approach, the teacher serves as a facilitator/consultant while students are engaged in the WebQuest. Thus, the most important steps or phases of the WebQuest strategy are those in the design process. While the following steps are in a numbered list, the development process does not necessarily proceed in a lock-step manner. The tasks involved in creating a WebQuest are as follows:

1. Select an appropriate topic
2. Select a WebQuest design pattern
3. Select & describe the task(s) your students will complete
4. Develop evaluation plans/instruments for your students' performance
5. Map out the process for your students
6. Document the WebQuest for other teachers (and your future use)
7. Use and revise the WebQuest

Select an appropriate topic

An engaging topic is at the heart of a good WebQuest. The topic should be both engaging for students and important for learning. Dodge suggests four filters for topic selection: curriculum standards, creative discontent, appropriate use of the medium, and level of thinking (undated, http://webquest.sdsu.edu/project-selection.html). To these filters we add a fifth, relevance.

Connecting your topic to national, state, or local curriculum standards is the easiest way to ensure your topic is important (or at least considered important by some group!). To take advantage of the power of the WebQuest model, good topics should be based on standards that require complex learning outcomes rather than development of simple factual knowledge. In fact, many standards express complex learning outcomes that *cannot* be met without the use of teaching approaches such as many of those presented in this text, which are designed to help students meet higher-level outcomes.

[Marginal note – The companion Website for this textbook (http://BOOKURL.listed.here) contains an extensive list of links to completed WebQuests that are correlated with national/state standards. Complete your own WebQuest and add it to our database. See Portfolio Development Activities at the end of the chapter.)

Creative discontent is a second filter to use when selecting WebQuest topics. Creative discontent refers to lessons or topics that you teach, but you know you could do a better job at teaching. Think about topics you are not comfortable teaching or lessons that have left you with a disappointed feeling. Often your students are just as displeased with these lessons as you are. By focusing your initial WebQuest development on lessons or topics that you know need work, you are meeting two objectives at once: improving your instruction and learning to teach with WebQuests.

A third filter to apply to potential WebQuest topics is "appropriate use of the medium." If the WebQuest you are designing could just as easily be done with books in a library, then you are not making appropriate use of the medium. As you consider a topic for your WebQuest ask, "What will the Web add to this topic? What is unique (or essential) that my students can access only on the Web? In developing your WebQuest topics don't forget the multimedia nature of the Web. The Web can add sound, movies, color photographs, or animations to your students' learning experience

Level of thinking is the fourth filter for selecting WebQuest topics. WebQuests are intended to help develop higher-level thinking abilities in students. Topics that require simple mastery of factual knowledge are more efficiently taught with other methods, such as direct instruction and mnemonics (see Chapter 6). However, if the topic requires students to analyze, synthesize, and evaluate then it is an appropriate topic for a WebQuest.

Relevance highlights the importance of a topic from the students' point of view. Is this a topic that students are naturally interested in? Do students easily see the connections from what is being studied to their lives? If the answer to these two questions is no, then the teacher needs to adjust the approach to the topic to maximize intrinsic motivation for students. One way to do this is to connect curricular topics to current issues or events of concern in the community, state, nation, or world. Often teachers can take a curriculum topic that students view as boring and turn it into an exciting learning event by their selection of a WebQuest design that captivates their students' imagination.

Select a WebQuest design pattern

The WebQuest design pattern you select is critical because it serves as the link between a curriculum standard you are focusing on (Step 1) and the specific task you assign students in order to meet the standard (Step 3). While it is possible to begin your WebQuest design by choosing a task you want students complete, often a teacher chooses a WebQuest design pattern first. The WebQuest design pattern then helps shape the performance task you select for students.

Bernie Dodge has analyzed multiple WebQuests and placed them into 24 different design categories. While these categories should not be considered exhaustive, they serve as a starting point for both beginning and advanced WebQuest designers in the process of creating original WebQuests. These categories of WebQuest designs range from *Alternative History* to *Collaborative Design* to *Genre Analysis* to *Simulated Diaries*. Each of these categories is represented in Figure 9.6. This table illustrates the connection between each WebQuest design patterns and individual thinking processes of Dimensions 3 & 4 in the Dimensions of Learning framework.

Insert Figure 9.6 About Here

For each WebQuest design pattern, templates are available at the WebQuests homepage. (http://webquest.sdsu.edu/designpatterns/all.htm.) Each WebQuest design pattern has templates available for student and teacher pages. This web site includes a description of each design, its instructional purpose, and examples of this type of WebQuest. Filamentality (http://www.kn.pacbell.com/fil/) also provides a template for teachers to provide **scaffolding** for them as they work through the development of their first few WebQuests in a step-by-step manner. The Filamentality web site hosts your WebQuest free for a one-year period.

[definition for margin] Scaffolding – Academic support, usually in the form of a list of steps or tips, provided to learners when they first encounter a new academic process or skill. This skill that receives the scaffolding is usually not the primary focus of student learning, but rather is an important aid in

helping students complete as assigned task. Scaffolding can also be provided in the form of electronic templates when students are learning a new software program. Scaffolding is provided until the student masters the skill. Ideally the scaffolding is removed incrementally (in small steps) allowing the learner to develop independent functioning in the skill before all scaffolding is withdrawn.

While the availability of templates is great for beginning WebQuest designers, advanced developers can create their own sites using HTML programming or web authoring software tools, such as Dreamweaver™ or FrontPage™.

Select & describe the task(s) your students will complete

The task is the core of a WebQuest. It provides the clearest single definition of the WebQuest and serves as the catalyst and focus of student activity. A great task is age-appropriate, interesting and engaging for the students, and requires higher-level thinking.

The WebQuest Taskonomy was developed through an analysis of the types of tasks teachers assigned in their WebQuests. These tasks range from the fairly simple (Retelling Tasks) to the complex (Judgment Tasks). Typical WebQuests include the use of more than one task type, relying on the interaction between the different tasks to increase the complexity of the thinking required. You will notice some similarities between the Design Patterns and the Taskonomy categories. The Design Pattern describes the WebQuest from the macro (big picture) view while the tasks are closer views of individual pieces of the WebQuest.

For example, a teacher who selects the Persuasive Message design for her WebQuest will almost certainly ask students to complete Persuasion Tasks. However, she could ask that these Persuasion Tasks be completed in combination with Journalistic Tasks or with Design Tasks. The overall form of the WebQuest is "persuasion," but the final structure of the WebQuest is shaped by the additional tasks selected by the teacher to work in tandem with the Persuasion Tasks. Figure 9.7 presents each of the Taskonomy categories and a brief description of each.

Insert Figure 9.7 About Here

Develop evaluation plan & /instruments for your students' performance

Once you have clearly identified the tasks your students will complete in your WebQuest, develop your evaluation plans before fleshing out the process. By focusing on the final products of the WebQuest before you map out the steps for students to follow, you increase your chances of designing a process that will help students produce the outcomes you expect.

Since your WebQuest requires students to complete complex performance tasks, using a simple evaluation tool will not be sufficient. Assessment **rubrics** are appropriate for use with WebQuest tasks. A rubric outlines the discrete **criteria** for evaluating each performance task. It also includes **performance indicators** – descriptions of varying levels of achievement for each criterion.

[Three definitions for margin –

Rubric – an assessment tool that takes complex assignments and uses words to explain to what good and bad performances look like. There are two basic types of rubrics – holistic and analytic. A holistic rubric uses one scale to assess an assignment as a "whole."

Criteria (on a rubric) – An analytic rubric is typically organized by criteria – the specific outcomes a teacher is looking for in an assignment. For example, in an oral report a teacher may expect students to have an outline for the presentation, to use complete sentences, speak clearly, speak slowly, maintain eye contact with the audience, and communicate accurate facts and ideas. These become the criteria by which students will be assessed and graded.

Performance Indicators – On a rubric, these are the narrative descriptions for each criterion that explain what each level (from weakest to strongest) of performance looks like.

The first step in creating a rubric is to identify the criteria you will use to evaluate the performance task. For example, imagine your WebQuest asks students to present an oral presentation that includes an electronic slide show. This presentation is to communicate their position on the use of animals for medical research. For this task you might identify the following evaluation criteria (in alphabetic order):

Adequacy of research sources
Appropriate use of transitions and effects in slide show
Clear communication of a personal position
Construction of support for their personal position
"Freedom" during the presentation (not simply reading the slides, but talking about what is being shown)
Oral language conventions
Original writing (no evidence of plagiarism)
Technical features of the electronic slide show
Written language conventions (punctuation, spelling, grammar)

While it is possible to generate extensive lists of possible evaluation criteria, a shorter, focused list of criteria is usually more desirable. A focused list of criteria allows the student to concentrate on specific goals and the teacher to give attention to criteria closely related to the curriculum standards being addressed. Recommendations for the number of criteria to use in a rubric vary among educators. Research on human mental functioning indicates that chunks of five to seven bits of information are optimal for memorization (cite The Memory Book or The Memory Bible). It is reasonable to limit your assessment rubric to no more than seven criteria if you want students to be able to keep it "in their mind."

After you select which criteria you will use for evaluating the performance task, the next step in rubric construction is the writing of performance indicators. Most rubrics use three and five levels of performance indicators to describe differing achievement levels. Sometimes these levels are simply numbered (Marzano, Pickering, & McTighe, 1993). Sometimes they are given descriptive labels, such as Unsatisfactory, Emerging, Competent, and Exemplary (Danielson, 1997a. 1997b, 1998, 1999). Due to the difficulty most beginning rubric writers have in framing performance indicators, we suggest you limit yourself to three or four levels of performance indicators when first writing rubrics.

[marginal note – For online assistance in creating rubrics, visit rubric generator sites (see suggested readings at the end of this chapter) and see what options are available to you. Online rubric generators provide for the creation of original rubrics, modification of existing rubrics, or the adoption of a pre-generated rubric for your classroom use. Some rubric sites are free while others charge a membership fee. Explore these sites and see how they can help you work with rubrics. We suggest you start by visiting Rubistar Online Rubric Generator:

http://rubistar.4teachers.org/http://rubistar.4teachers.org/.]

In drafting the language for performance indicators, it is usually easier to write descriptions of very weak or very strong performances. Start writing your performance indicatory with one of these extremes. From a learning theory perspective, it is best to start with the description of the ideal performance you could expect from your students. After you have drafted this "ideal" performance, vary the wording to describe what the next lower level of performance would look like. Continue this process until all levels of the performance indicator are written for each criterion. Figure 9.8 presents a portion of an assessment rubric used to evaluate teachers' Inquiry Training lesson plans, a topic you should be familiar with (see Chapter 9, Part 1). In this rubric, performance indicators at levels 1 or 2 are considered unacceptable performances. Level 3 is the minimum acceptable level for teachers just learning the strategy. Level 4 is the minimum acceptable level for student teachers completing the teacher preparation program. Level 5 is not expected until teachers have used the strategy consistently over time.

Insert Figure 9.8 About Here

Map out the process for your students

Now that you have identified what your students will do and how you will evaluate them, it is time to create the structure that will support your students' learning. This involves three tasks: finding excellent Web sources, writing out instructions the students will follow in a step-by-step manner, and including scaffolding as needed.

One of the driving purposes of a WebQuest is to help students make *efficient* use of the Internet. Teachers help students use the Internet efficiently by doing the initial searching, and then screening and selecting quality Web sites related directly to the topic students are studying. Only the Websites selected by the teacher are included in the WebQuest.

Bergmon (2000) reports that of the 550 billion Web pages extent in 2000, only about one billion would be found using typical search engines and strategies. The remaining 549 billion Web pages compose a "deep web" of resources that can make your WebQuest come alive for students (Figure 9.9 illustrates some of the resources available on the "Deep Web"). Finding appropriate resources in the "deep web" requires smart searching. In addition to the guidelines for searching and Web site selection found in Chapter 2 of this book, the WebQuest homepage includes links to documents that describe techniques for intelligent searching (Four NETS) and list specialized search engines and Web directories (see the resource list at the end of this chapter for the WebQuest Homepage URL).

Insert Figure 9.9 About Here

Since a WebQuest does not typically involve much "teacher talk" delivered to the whole class, the student instructions included in your WebQuest are critical to student success. These instructions need to map out the process the students should follow to success. Many teachers find a set of numbered steps to accomplish work well. You may want to look at several examples on our companion web site to see examples of student instructions.

Embed the Web resources you want your students to use at appropriate locations within the process instruction you provide to students. Include an adequate number of resources to ensure students will be able to complete the assigned tasks, but not so many resources that students are overwhelmed. Above all else, your instructions for the students in the process section must be clear and

understandable.

Often teachers include cooperative learning as part of the core design of their WebQuest and assign roles to students to ensure both positive interdependence and individual accountability (see Chapter 6 for a complete discussion of Cooperative Learning). If you assign roles, make sure they are necessary to the completion of the task and that they are clearly explained. For complex or new roles, you may need to provide scaffolding for students.

When students first encounter an assignment that requires a new skill, they can feel overwhelmed. Scaffolding refers to the practice of providing supportive materials and resources to help ensure student success in using a new skill. As the student develops their skill, the teacher incrementally removes the scaffolding. For example, if you want primary grade students to use a spreadsheet program to organize data from a series of experiments, it would be unreasonable and inefficient to try to teach the third graders how to use the features of a spreadsheet program before recording the experimental data. However, the teacher can provide a scaffold for the children in the form of a spreadsheet template document that the student simply opens and then uses to record their individual data (see Figure 9.10). After the students have used this type of template several times, most will be ready to create their own simple spreadsheet to record data.

Insert Figure 9.10 About Here

As part of the *Triton and Patterns Project* of the San Diego Unified School District, educators have developed a series of process guides to scaffold student learning. These guides include processes for Brainstorming, Building Consensus, Persuasive Arguments, and more. Process guides were also developed to support teachers in evaluating Web sites and using photographs in the classroom. These guides are available online (see the resource list at the end of this chapter for the process guides URL).

To complete the process section of your WebQuest, write an introduction and conclusion for the students. A captivating introduction "pulls" students into the learning you have designed in your WebQuest. It serves as a motivator and a launching point. The conclusion usually requires students to reflect on what they have learned and how their learning will make a difference to them in the future. The conclusion is an appropriate place to ask students to make suggestions for improving the WebQuest (see "Use and revise the WebQuest" below).

Document the WebQuest for your future use (and other teachers)

The final development step before using a WebQuest is to complete the "teacher" portion of the WebQuest templates. This information varies depending on the templates you are using. Regardless of whether you are using a template or creating your own HTML code, it is always wise to clearly identify the standards and benchmarks met by your WebQuest, the materials needed, a description of your use of cooperative learning, and your estimated timeframe for completing the WebQuest. To model proper ethical behavior for your students, be sure to reference all sources used in developing the WebQuest. The extra effort taken in documenting your WebQuest makes it easier for you to use more than one semester and easier to share with other teachers. Bernie Dodge has identified 14 details that can help move the appearance of your WebQuest from acceptable to exemplary. His "fine points" checklist is listed in the resources at the end of this chapter.

Use and revise the WebQuest

After the WebQuest is developed, it is time to implement it. During the first use of any WebQuest try to collect feedback from your students about what works well in the WebQuest and what is causing them trouble. Ask them for changes they would suggest in the Web Quest. These types of information can be gathered through both informal observations and more formal collection of student data through journals and written responses. Keep written record also of your response as a teacher to the implementation of your WebQuest. What did you perceive that worked well? What didn't work well? What ideas for changes do you have? The data you collect from your students and your experience serves as your reference point as you make an informed revision of your WebQuest before using it again.

Why do WebQuests work?

The philosophical roots of WebQuests can be traced to the Progressive Education movement of the late nineteenth and early twentieth century. Led by Dewey the Progressives advocated for a learner-centered curriculum that actively engaged children in experiential learning with strong connections to real life. Kirkpatrick, one of Dewey's students tweaked his learning theories and began to promote project-based learning during the first half of the twentieth century (Tanner & Tanner, 1990). With its emphasis on student performance of complex tasks, the WebQuest strategy is a contemporary variation of project-based learning (March, 2000).

Motivation is one reason WebQuests work. A WebQuest provides both intrinsic and extrinsic motivation: learner-focused topics, completion of real life tasks, affirmation for a job done well, and meaningful use of knowledge. By taking learning beyond simple factual recall and low-level functioning, WebQuests take advantage of natural human curiosity and the desire to make meaning of the world. To make meaning, an individual uses many of the thinking processes included in Dimensions 3 and 4 of the Dimensions of Learning Framework. Since the WebQuest strategy is built upon the Dimensions of Learning framework, it is not surprising that it engages students in motivating and rewarding higher-level thinking processes.

What are the typical learning outcomes for WebQuests?

While it is inevitable that students will gain some basic declarative and procedural knowledge by completing a WebQuest, the most impressive learning occurs at higher levels of thinking. The specific types of learning outcomes will vary according to the design of the WebQuest and the performance tasks assigned.

All of the following thinking skills are potential outcomes: comparing, classifying, abstracting, inductive reasoning, deductive reasoning, constructing support, analyzing errors, analyzing perspectives, decision-making, problem-solving, invention, experimental inquiry, investigation, or systems analysis.

Table 9.6 demonstrates the correlation between the WebQuest designs and complex learning outcomes, which are closely linked to many national and state content standards.

How can I shape and refine my use of WebQuests?

Two Variations of WebQuests

There are two basic forms of WebQuests: short-term and long-term. A short-term WebQuest is designed to engage students for a few class periods or hours. It is focused on tasks that can be

attained in a relatively short time frame. Long-term WebQuests seek broader learning outcomes and include learning tasks that take up to several weeks to complete.

Getting started with WebQuests

Creating a WebQuest can be a daunting task if you think you must create everything, including the web pages, without assistance. Consistent with the concept of providing scaffolded support to students during a WebQuest, Bernie Dodge's WebQuest web site provides templates for teachers to use in creating WebQuests. Dodge's site includes many other resources for WebQuest development, including a rubric teachers can use to guide both the development and evaluation of their WebQuest. See the resource list at the end of this chapter for the URL.

Scaffolded templates may also be found at the Filamentality web site. The Filamentality templates have the added feature of interactive help options and "mentality tips" while creating the WebQuest. The Filamentality site will host your WebQuest for approximately one year. See the resource list at the end of this chapter for the URL. See the resource list at the end of this chapter for the URL.

Guidelines for interaction in WebQuests

If you decide to use Cooperative Learning as a part of your WebQuest design, be sure to make all aspects of cooperative interaction explicit in the process section of your WebQuest. Explain to student how groups will be formed. Explain what roles (if any) are being assigned to aid team functioning.

If your WebQuest includes team projects or long-term projects, schedule specific checkpoints at regularly timed intervals. At each team checkpoint, explain how team members should interact with each other to document progress. Also explain how and when individuals and teams will interact with the teacher to document their progress.

Additional tips for rubric construction

One easy technique for creating language for your assessment rubrics is to adapt existing language from a good example. You may be able to find a rubric that is close to what you need, but it just needs a little refinement. Marzano, Pickering, and McTighe (1993) developed a set of rubrics for the Dimensions of Learning Framework that can be easily adapted for use as WebQuest rubrics. Marzano's book includes many specific rubrics and at least two generic rubrics for declarative and procedural knowledge. Additional sources can be found in the resource list at the end of this chapter. Remember, if you adapt a rubric be sure to give the original author credit in your WebQuest.

Establishing a classroom climate for WebQuests

Since most WebQuests are completed in cooperative groups, the most important guidelines for developing a classroom climate that promotes learning through WebQuests are the same as those listed in the chapter on cooperative learning. Review those guidelines now.

During WebQuests, teachers are commonly on the "sidelines," giving guidance as needed by students. Therefore it is important that your WebQuests contain adequate scaffolding to support the learners in their activity. Otherwise you will find yourself running from team to team repeatedly explaining the same things. When planning your WebQuest, think about your students and their unique needs. Provide the support they need without being "overprotective." Teach your cooperative teams to try to answer their own questions at least two ways before calling the teacher over.

If you are lucky and have enough computers for all your students to be working at the same time (individually or in cooperative teams) you will need to have established procedures for students

moving to and from the computers, acceptable use of Internet resources, and appropriate signals for getting the teacher's attention. All of these procedures need to be shared with the students and rehearsed during the first days of the school year. If all, or even most, of your students are online at the same time you will need to be actively 'working the crowd' (Jones, 2000) to monitor student work and Internet activity. The teacher's presence is the single most important factor in keeping students from visiting inappropriate Websites.

How can I utilize computer-based technology with WebQuests?

Since WebQuests are web-based, there is no way to conduct a WebQuest without being online. Hundreds of examples of WebQuests exist on the Internet – all of varying quality levels. You may use Dodge's rubric for assessing WebQuests to evaluate those you find online as well as those you make. Here are descriptions of two WebQuests.

* * *

Marcus raises his hand to call Mrs. Hebert over to his computer. He is researching the advantages and disadvantages of building a coal-powered generator in his town to provide electricity. But, he is having trouble with one of the links he is supposed to follow. He asks the teacher a clarifying question.

One of his teammates, Jennifer, is busily organizing the notes she gathered on building a wind-powered electric power plant for town. Marcus' and Jennifer's team is scheduled to meet tomorrow morning to discuss what they have learned about four different power sources. Then the hard part comes – they have to decide which type of generator to recommend to the mayor, their sixth-grade teacher.

Mrs. Hebert has used a cooperative structure – jigsaw – to provide the basic format for her Wind, Water, Sun, or Coal WebQuest. Each student completes one component of research and then brings their individual contributions to the group. Once all students have shared their information, the team can complete the rest of the project – in this case a persuasive poster.

* * *

Some of the best-documented WebQuests available are those prepared by pre-service teachers or practicing teachers enrolled in university courses. "A New Twist on an Old Tale" asks students in grades 3-5 to investigate the Cinderella story in three different cultures and then write a version of the story to fit a fourth culture (Buckholz, Harris, & Lafferty, 2002).
Students work in teams of four to investigate the three versions of Cinderella and to investigate ancient Greek culture. One team member becomes an expert on Greek society and norms. A second student becomes the "Greek Marriage Counselor." A third team member investigates gender roles and expectations in ancient Greece. The fourth student on the team becomes the "stage setter" – learning about Greek geography, climate, architecture, clothing, and food. All resources are found online, including versions of the Cinderella story from the Vietnamese, Russian, and Italian traditions.

Because of the complex nature of the performance tasks students complete in a WebQuest, traditional assessment techniques are inadequate. The use of assessment rubrics is imperative in the evaluation of students work when completing a WebQuest.

Technological resources exist to assist in the assessment of learning in a WebQuest. There are several versions of rubric generation software and websites. Some are free while others require purchase or a membership. The advantage of rubric software or websites is the ease of creation. Some rubric generators have pre-loaded language for performance indicators that can be directly imported

into your rubric, thus greatly shortening development time. This can also lead to a down-side of rubric generators. Some, usually those available at no charge, are limited to certain pre-determined choices. They may or may not be appropriate for the task you have assigned. Rubric software available for purchase usually includes pre-fabricated rubrics as well as the ability to create rubrics from a blank template.

Many tasks that you assign students will result in electronic products, whether an electronic database, a digital video, a web page, a slide show, or some combination of multiple electronic products. Since these tasks are electronic, students need access to appropriate technology to complete them. You, as teacher, also need access to the same technology in order to assess the completed projects.

Summary

Inquiry Training **[deleted]**

WebQuests represent one of the first serious, scholarly attempts in K-12 education to apply learning theory to a Web-based learning environment (Dodge, 1997;March, 2000). Based on the synthesis of research in the Dimensions of Learning framework (Marzano & Pickering, 1997) WebQuests promote higher level thinking and application of learning to real life. The combination of real life application of learning and a Web-based learning environment seem to serve as strong motivators for most students. The use of WebQuests in the classroom require thorough planning and development on the part of the teacher before presenting the lesson to students. Implementation of WebQuests will vary depending on the number of Internet-connected computers available to teachers at any one time.

Questions Teachers Ask About Inquiry Training
[deleted]
Questions Teachers Ask About WebQuests

Q: How many Web sites should I include in my WebQuest?

A: The general rule is this, "Use as few links as possible." Remember the focus of a WebQuest is on the efficient use of the Internet for learning, not on visiting multiple sites. Some teachers even include notes for students in the process section of their WebQuests identifying the most appropriate sections of each Web site to look at.

Q: When should I include scaffolding for student tasks in my WebQuests?

A: Use some type of instructional scaffold every time you introduce a new task to your students. Continue using the scaffold until students master the skill. It is possible to remove the scaffolding incrementally, a little at a time. Discontinue the scaffold after the students have mastered the skill. Some students will need the scaffolding for longer periods of time, others for shorter periods of time. You can keep all your scaffolds/templates accessible on your classroom website. This will allow any student who needs the extra support to use them when they choose.

Portfolio Development Activities – Inquiry Training
[deleted]

Portfolio Development Activities: WebQuests

1. Develop a detailed outline describing a design for a WebQuest. Explain you design decisions at each step of the way. Include you plans for classroom management, grouping of students, and assessment of learning.
2. Develop a complete WebQuest. Post it on your personal Web site, local university Web site, the Filamentality Website (see suggested readings), or the companion Website for this textbook (http://URL.Goes.Here). Print out selected pages from the WebQuest for the print version of your portfolio. Link to your WebQuest site from your electronic portfolio.
3. Submit your completed WebQuest to the textbook companion Website for inclusion in our database. This requires explicit connection to both national and your state standards. If your professor approves your completed WebQuest, s/he will provide you with the needed PIN to upload your WebQuest information.
4. Develop an assessment rubric for your proposed or completed WebQuest.
5. Use your WebQuest with a group of children during one of your field experiences. Document their participation with examples of student work, your assessment of their work, their reflective comments on the WebQuest, your reflections on the completion of the WebQuest, and feedback from your cooperating teacher and/or university professor. Include photographs or videotape footage if possible. Remember to abide by the school's policy on posting photographs of students. This may require that you digitize the photos and make the students' faces "fuzzy" with a software program such as Adobe Photoshop Elements™.

References

Bergmon, Michael K. (2000). The DeepWeb: Surfacing Hidden Value. *The Journal of Electronic* Publishing, vol. 7, no. 1. Available online: http://www.press.umich/edu/jep/07-01/bergman.html. Last accessed October 27, 2002.

Bruce, W.C., And Bruce, J.K. (1992). *Learning Social Studies Through Discrepant Event Inquiry*. Annapolis: Alpha Press.

Buckholz, Whitney, Valerie Harris, and Katelyn Lafferty. (2002). A New Twist on and Old Tale: An Internet WebQuest on Cinderella. Redesign of the WebQuest originally designed byIrene Garci, Wesley Kohl, and Stacy Stevens. Available online: http://oncampus.richmond.edu/academics/as/education/projects/webquests/cinderella/. Last accessed October 27, 2002.

Cox, Cheryl J. (2002). Cinco de Mayo: A Grade 2-3 WebQuest. Available online: http://www.zianet.com/cjcox/edutech4learning/cinco.html. Last accessed October 27, 2002.

Danielson, Charlotte. (1997a). *A Collection of Performance Tasks and Rubrics: Middle School Mathematics*. Larchmont, NY: Eye On Education.

Danielson, Charlotte. (1997b). *A Collection of Performance Tasks and Rubrics: Upper*

Elementary School Mathematics. Larchmont, NY: Eye On Education.

Danielson, Charlotte. (1998). *A Collection of Performance Tasks and Rubrics: High School Mathematics*. Larchmont, NY: Eye On Education.

Danielson, Charlotte. (1999). *A Collection of Performance Tasks and Rubrics: Primary School Mathematics*. Larchmont, NY: Eye On Education.

Dodge, Bernie. (2002). WebQuest Taskonomy: A Taxonomy of Tasks. Available online: http://webquest.sdsu.edu/taskonomy.html. Last accessed September 25, 2002.

Dodge, Bernie. (2001). "FOCUS: Five Rules for Writing a Great WebQuest," *Learning and Leading with Technology*, vol. 28, no. 8. Available online: http://www.iste.org/L&L/28/8/featuredarticle/dodge/index.html. Last accessed September 25, 2002.

Dodge, Bernie. (1997). "Some Thoughts About WebQuests, Version 1.03." Available online: http://edweb.sdsu.edu/courses/edtec596/about_webquests.html. Last accessed September 25, 2002.

Hebert, Trish. (2002). Wind, Water, Sun or Coal: Which is the Best Source of Energy for the Town? A WebQuest for Grades 3 and Up. Available online: http://home.cfl.rr.com/mrshebert/Energy/top.htm. Last accessed October 27, 2002.

Jensen, E. (1998). *Teaching with the Brain in Mind*. Alexandria, VA: Association for Supervision and Curriculum Development.

Joyce, B., Weil, M., with Calhoun, E. (2000). *Models of Teaching*. Boston: Allyn and Bacon.

Kendall, J. S. and Marzano, R. J. (1996). *Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education*. Aurora, CO: Mid-continent Regional Educational Library.

Kohn, A. (1999). *Punished by Rewards: The Trouble with Gold Stars, Incentive Plans, A's, Praise, and Other Bribes*. Houghton Mifflin Company.

Kovalik, S., with Olsen, K. (1997). *ITI: The Model, Integrated Thematic Instruction*. Kent, WA: Books for Educators.

March, Tom. (2000). "WebQuests 101," *Multimedia Schools*, vol. 7, no. 5 (October, 2000), p. 55-58.

Marzano, Robert, Debra Pickering, & Jay McTighe. (1993). *Assessing Student Outcomes: Performance Assessment Using the Dimensions of Learning Model*. Alexandria, VA: The Association for Supervision and Curriculum Development (ASCD).

Marzano, Robert J., Debra J. Pickering, Guy J. Blackburn, Daisy E. Arredondo, Ronald S. Brandt, Cerylle A. Moffett, Diane E. Paynter, Jane E. Pollock, & Jo Sue Whisler. (1997). *Dimensions of Learning: Teacher's Manual, 2nd Edition*. Alexandria, VA: The Association for Supervision and Curriculum Development (ASCD).

Milson, Andrew J. (2001). *Engaging Students in Historical Inquiry Using Internet Resources.* Paper presented at the 81st annual meeting of the National Council for the Social Studies, Washington, D.C., November 15-18, 2001.

Nakagiri, G. (1992). Topics in the Science Curriculum, Grades K-12, in *Science Curriculum Resource Handbook*, Millwood, NY: Kraus International Publications.

Pearson, S. (2000). *Tools for Citizenship and Life: Using the ITI Lifelong Guidelines and LIFESKILLS in Your Classroom*. Kent, WA: Books for Educators.

Piaget, J. (1960). *The Child's Conception of the World*. Atlantic Highlands, NJ: Humanities Press.

Schweickert, Crystal L. (2002). "Call Me:" A WebQuest for 9th Grade (Math A). Available online: http://www.gowcsd.com/master/ghs/math/furman/linsystem/call_me.htm/. Last accessed October 27, 2002.

Stern, E. (1996). Rethinking Prior Knowledge: Facets Instead of Misconceptions. *Issues in Education*, 2(2), p. 195-199.

Suchman, J. R. (1964). *The Elementary School Training Program in Scientific Inquiry*. A project of the Illinois Studies in Inquiry Training supported by grants from the U.S. Department of Health, Education, and Welfare, Office of Education; and by the Research Board of the University of Illinois. Title Vii Project Number 216; National Defense Education Act of 1958. Grant No. 7-11-038. Urbana: University of Illinois.

Suchman, J. R. (1966). *Developing Inquiry*. Chicago: Science Research Associates, Inc.

Suchman, J. R. (1976). *Occasional Paper Series: Heuristic Learning and Science Education*. ERIC Information Analysis Center for Science, Mathematics, and Environmental Education. (ERIC Document #123127)

Sylwester, R. (1995). *A Celebration of Neurons: An Educator's Guide to the Human Brain.* Alexandria, VA: Association for Supervision and Curriculum Development.

Tanner, Daniel, & Laurel Tanner. (1990). *History of the School Curriculum*. MacMillan Publishing Company.

Weiderhold, C. (1998). *Cooperative Learning and Higher-level Thinking: The Question Matrix*.

San Juan Capistrano, CA: Resources for Teachers.

Yoder, Maureen Brown. (1999). "The Student WebQuest," *Learning & Leading with Technology*, vol. 26, no. 7. Available online: http://www.iste.org/L&L/26/7/features/yoder/index.html. Last accessed September 25, 2002.

Suggested Readings & Resources for Inquiry Training
[deleted]

Suggested Readings & Resources for WebQuests

Bernie Dodge's WebQuest Homepage: http://webquest.sdsu.edu/

Filamentality Web site: http://www.kn.pacbell.com/fil/

Process guides: http://projects.edtech.sandi.net/staffdev/tpss99/processguides/index.htm/

Fine points checklist: http://webquest.sdsu.edu/finepoints/

Danielson, Charlotte. (1997a). *A Collection of Performance Tasks and Rubrics: Middle School Mathematics*. Larchmont, NY: Eye On Education.

Danielson, Charlotte. (1997b). *A Collection of Performance Tasks and Rubrics: Upper Elementary School Mathematics*. Larchmont, NY: Eye On Education.

Danielson, Charlotte. (1998). *A Collection of Performance Tasks and Rubrics: High School Mathematics*. Larchmont, NY: Eye On Education.

Danielson, Charlotte. (1999). *A Collection of Performance Tasks and Rubrics: Primary School Mathematics*. Larchmont, NY: Eye On Education.

Rubricator Software: http://www.newgradebook.com or http://www.rubrics.com/

Rubistar Online Rubric Generator: http://rubistar.4teachers.org/http://rubistar.4teachers.org/

TeAch-nology Online Rubric Generator (requires membership: http://teach-nology.com/web_tools/rubrics/

Rubric Builder (The Landmark Project): http://www.landmark-project.com/classweb/tools/rubric_builder.php3

Tucson Unified School District Rubric Generator: http://edweb.tusd.k12.az.us/aswanson/Rubrics/search.asp

The Rubric Processor Software (free download): http://insys.ed.psu.edu/~lin/Rubric/H_rubric.htm

A Brief Overview of Dimensions of Learning

Dimensions of Learning (Marzano et al.) is a framework for planning and implementing instruction that goes beyond simple factual learning and recitation of knowledge.

Dimension 1 deals with the students' and teachers' need to hold positive attitudes and perceptions about learning. Students have concerns about the climate (acceptance, comfort, safety) of the classroom as well as the value and clarity of the tasks assigned.

Dimension 2 focuses on student acquisition and integration of knowledge. Students need to learn foundational knowledge that is both fact-based (declarative) and skills-based (procedural).

Extending and refining knowledge is the domain of Dimension 3. Classification, induction, deduction, and analyzing perspectives are examples of the complex thinking skills that fit in Dimension 3.

Dimension 4 is making meaningful use of knowledge. Many Web-Quests address Dimension 4 through the use of simulations, invention, decision making, or reality-based projects. In Dimension 4 students are given ownership of their learning and decide how to make their learning meaningful. Productive habits of mind are the goal of Dimension 5. The habits in Dimension 5 can be thought of as life-long learning skills. These include such habits as reflective thinking, efficient planning, accuracy, and being open minded.

Figure 9.5: A Brief Overview of the Dimensions of Learning Framework

Note – This is the first version. I need to have some other people review this to see if they concur with my correlations.

Design Category	D3 Processes	D4 Processes
Alternative History	CDIS	It
Analyzing for Bias	EP	Is
Behind the Book		
Beyond the Book		
Change Models	CDIS	Sa
Collaborative Design	EPS	It
Commemorative	ACDI	It
Compilation	CY	It
Concept Clarification	ACDIS	Is
Concrete Design	EPS	It
Exhibit	ACDEIPSY	It
Genre Analysis	ACDIS	Sa
Historical Story	IPS	It
In the Style of …	S	Sa, It
Meeting of the Minds		
On Trial	S	Dm, Ps
Parallel Diaries	PS	It
Persuasive Message	EPS	Is, Ps
Policy Briefing	EPS	Dm
Recommendation	DIEPS	Is, Dm
Simulated Diary	DIPS	It
Time Capsule	APS	It
Travel Account	EPS	It
Travel Plan	CPSY	It

Processes from Dimension 3	Processes from Dimension 4
A= abstracting C=comparing D=deduction E=error analysis I=induction P=analyzing perspectives S=constructing support Y=classifying	Dm=decision making It=Invention Is=Investigation Ps= Problem solving Si=Scientific inquiry Sa=Systems analysis

Table 9.6: Correlation Between WebQuest Design Categories and Thinking Processes from Dimensions of Learning (Marzano & Pickering, 1997)

WebQuest Taskonomy Category	Description
Retelling	Students learn information and then share what they have learned in their own words, usually in a report-style format.
Compilation	Students gather data from multiple sources and then organize the information in a common format for sharing with others
Mystery	Students gather data from multiple sources to solve a puzzle
Journalistic	Student simulate the work of reporters covering a new event or human interest story
Design	Students create a product or plan
Creative	Students complete an artistic product within the constraints of the given genre (painting, play, poem, etc.)
Consensus Building	Students explore differing perspectives on a controversial topic and attempt to reach a team solution
Persuasion	Students produce materials to try to convince others to agree with her opinion or his interpretation
Self-knowledge	Students engage in introspection and reflection
Analytical	Students investigate similarities, differences, cause-effect, and systemic relationships
Judgment	Students rate, rank, and evaluate
Scientific	Students engage in the scientific method

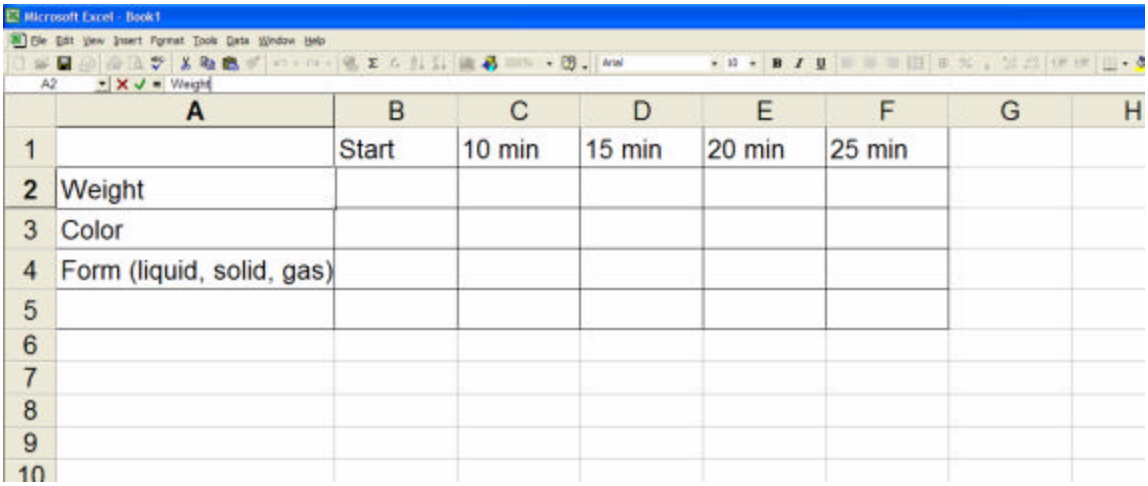
Figure 9.7: WebQuest Taskonomy Category Descriptions
(From Dodge, 2002)

Criteria	1	2	3	4	5
Objectives	No objectives written for the lesson plan	Attempted, but do not match the outcomes of this teaching strategy	Generic for both the lesson content ***and*** the teaching strategy	Specific for one of lesson content/ teaching strategy ***or*** generic for both	Specific to lesson content ***and*** the teaching strategy
Discrepant Event	Not discrepant event included in the lesson plan	Incomplete **B** Not truly a discrepant event *or* part of the detail is missing	Interesting for some, but not all, of the target audience	Grabs the attention of most of the target audience	Magnetic **B** draws all learners into the lesson
Fidelity to the Strategy	Lesson as planned does not follow the Inquiry Training process	Lesson plan shows evidence that teacher does not understand the Inquiry Training strategy	Lesson plan is a close imitation of the sample lesson plan provided by the professor	Plan includes all phases of Inquiry Training, with evidence of some teacher misconceptions	All phases of the strategy are included with evidence of the teacher's comprehension of the teaching strategy

Figure 9.8: **Criteria/Performance Indicators Excerpt**
From Inquiry Training Lesson Plan Rubric

- ✓ Original source documents (legal documents, historical documents, text of famous speeches, etc.)
- ✓ Interaction with recognized experts (via email or "ask-an-expert" sites)
- ✓ Animations
- ✓ Online simulations
- ✓ Photo archives
- ✓ Eyewitness accounts of historical events
- ✓ Up to the minute news, weather, sports, etc.
- ✓ Sound clips
- ✓ Music clips
- ✓ Searchable databases on multiple topics
- ✓ Recorded interviews with persons
- ✓ Online museums

Figure 9.9: Examples of Resources Available on the "Deep Web"



	A	B	C	D	E	F	G	H
1		Start	10 min	15 min	20 min	25 min		
2	Weight							
3	Color							
4	Form (liquid, solid, gas)							
5								
6								
7								
8								
9								
10								

Figure 9.10: Sample Spreadsheet Template for Simple Data Recording