

WebQuest: Water You Gonna Do?

Constructivism Model

Problem-Based Inquiry (V.2 – WebQuests), Chapter 7, pp. 133–137 Grade 5, Physical Education

1. MATERIALS/PREPLANNING

- **Materials**
 - Computers with Internet access & word-processing software (1 per student)
 - Headphones (1 per computer)
 - Poster boards (1 per group)
 - Markers
- **Vocabulary**
 - Hydration
 - Dehydration
- **Literature**
 - “Sports Dehydration Safety Tips” from www.safekids.org
 - <http://www.safekids.org/sites/default/files/documents/sports/DEHYDRATION%20SAFETY%20TIP%20SHEET%202013.pdf>
 - “The Effects of Dehydration” from www.functional-fitness-facts.com
 - <http://www.functional-fitness-facts.com/effects-of-dehydration.html>
 - “How Water Works” from www.howstuffworks.com
 - <http://science.howstuffworks.com/environmental/earth/geophysics/h2o3.htm>

2. OBJECTIVE

- **Objectives**
 - **Students Will Understand**
 - Water intake is critical to mental and physical health
 - **Students Will Know**
 - The negative effects of dehydration on physical and mental activity
 - Available options for increasing water intake
 - **Students Will Be Able To**
 - Formulate a sustainable plan to ensure sufficient water intake.
- **State the Cognitive Taxonomy and/(Affective/ Psychomotor) Level**
 - **Cognitive**
 - Knowledge
 - Comprehension
 - Application
 - Analysis
 - Synthesis
 - Evaluation
 - **Affective**
 - Receiving
 - Responding
 - Organization
- **Standards**
 - **Physical Education Framework (2009)**
 - *Standard 4: Students demonstrate knowledge of physical fitness concepts, principles, and strategies to improve health and performance.*

- 4.2 Explain why dehydration impairs temperature regulation and physical and mental performance.
- **Reading-Language Arts Framework (2007)**
 - 1.0 Writing Strategies
 - Organization and Focus
 - 1.2 Create multiple-paragraph expository compositions:
 - a. Establish a topic, important ideas, or events in sequence or chronological order.
 - b. Provide details and transitional expressions that link one paragraph to another in a clear line of thought.
 - Research and Technology
 - 1.3 Use organizational features of printed text (e.g., citations, end notes, bibliographic references) to locate relevant information.

• **ASSESSMENT**

- **Progress monitoring (informal):** As students are completing the WebQuest on their computers, it is necessary to monitor them to make sure they are on-task and using the technology appropriately. The teacher assumes the role of facilitator and resource in this type of lesson, and therefore must be available to provide support as students engage in inquiry.
- **Research report (formal):** In order to complete the WebQuest, students must **compose** a report based on their findings. This report, according to the WebQuest, will include the following information:
 - Defines dehydration and explains how it happens
 - Illustrates how dehydration harms the body and mind
 - Presents strategies for increasing water intake and preventing dehydration

This 3-paragraph report will be evaluated based on the following rubric:

Category and Score	Needs Improvement (1)	Acceptable (2)	Good (3)	Excellent (4)	Score
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Accuracy	Content of report is rarely based on information found in articles and videos linked to WebQuest.	Content of report is somewhat based on information found in articles and videos linked to WebQuest.	Content of report is mostly based on information found in articles and videos linked to WebQuest.	Content of report is entirely based on information found in articles and videos linked to WebQuest.	___
Grammar	Report includes many grammatical or spelling errors.	Report includes several grammatical or spelling errors.	Report includes few grammatical or spelling errors.	Report includes no grammatical or spelling errors.	___
Purpose	Content of report is unclear in achieving its overall purpose, and one or more paragraphs do not achieve their purpose.	Content of report is somewhat clear in achieving its overall purpose, but one or more paragraphs do not achieve their purpose.	Content of report is mostly clear in achieving its overall purpose and the purpose of each individual paragraph.	Content of report is clear in achieving its overall purpose and the purpose of each individual paragraph.	___
				Total Score	___/16

- **Group participation (authentic, self-evaluation):** After completing the small group activity of designing/creating a poster and presenting it to the class, students will evaluate themselves based on their participation in the group. They will be given 4 choices (with points assigned accordingly):
 1. I was not very involved in the creation of the poster or in the sharing of ideas.
 2. I helped a little bit as we created the poster and shared our ideas.
 3. I participated in the creation of the poster and shared some of my ideas.
 4. I worked hard to help create the poster and shared my ideas as much as possible.

These 4 possible points will be added to the 16 from the paper for a total of 20 points. Self-evaluation is critical to the inquiry process because it encourages further reflection – not on

the methods used, but on how effectively or appropriately the methods were used. Students who learn to think about their role in the creative process will also benefit in future creative endeavors.

4. LESSON OPENING/PURPOSE

- **Clearly state to students how this lesson will benefit students.**

My version: Students of this age group are gaining more independence, and therefore are beginning to make more choices about what they eat and drink. With sodas, coffee beverages, and energy drinks marketed more and more toward youth, kids need to be informed about the importance of hydration more than ever.

Student version: As you are all growing up, you are gaining more independence and making more decisions for yourselves. This involves what you **choose** to eat and drink, and those choices affect how well your body can handle all the things it needs to do. The same goes for your mind. As we learn about hydration and dehydration, consider your own choices and how they might be affecting you.

5. MOTIVATION FOR LEARNING

- *Extrinsic* motivation is present in the form of a grade for the work done in this lesson, but the delivery and the intent of the lesson should aid in building *intrinsic* motivation. Because the lesson equips students to make informed decisions about what they drink and how they take care of their bodies, their own improve health is their reward.
- Students will find motivation to complete the lesson enthusiastically because of the inquiry-based format, the engaging WebQuest activity, and the videos they will get to enjoy while learning. The presentation of a hand-made poster should also contribute to the support of students' intrinsic motivation.

6. LESSON BODY

Step 1 Review/Make Connections to Previously Learned Material

Students will receive the graphic organizer about the effects of dehydration (attached at end of lesson), though they will not complete it until the end of the lesson. At this point in the lesson, they will offer ideas that the teacher will list on the board. For example, when asked how dehydration affects the body, students might suggest words like "tired," "thirsty," or "sick"; when asked how it affects the mind, they might offer such words as "distracted" or "can't focus." By the end of the lesson, they will be able to **evaluate** these ideas with confirmation or rejection.

Step 2 State Objectives for the Lesson (State the objective to students in a way that students will know what they will learn. This helps them make connections with prior learning.)

Our purpose in completing today's lesson is two-fold: to inquire into the causes and effects of dehydration – a serious physical condition that is more common than we think – and develop a plan for keeping ourselves properly hydrated. Last year, you learned about why the body needs water before, during, and after physical activity (Standard 4.5). Now we will learn about what happens when your body does not get enough water, and how we can give our body its best chance to function at its highest level.

Step 3 Present New Material

1. The Teacher Selects a Problem and Conducts Preliminary Research

- The web resources gathered for the WebQuest include the following articles and videos:
 - "The Effects of Dehydration" from www.functional-fitness-facts.com
 - "How Water Works" from www.howstuffworks.com
 - "Dehydration Can Cause Fatigue" – YouTube

- “Sports Science: Effects of dehydration on athletes?” – YouTube
- “Sports Dehydration Safety Tips” from www.safekids.org

2. Present the Problem in the WebQuest Template

- Students will individually use computers with Internet access to complete the necessary tasks for the WebQuest. They will also need headphones to access all the media.
 - **The URL for the WebQuest is** <http://zunal.com/webquest.php?w=201187>. This is an original WebQuest created through www.zunal.com.

3. Students Gather Data and Information to Solve the Problem

- Following the format of the WebQuest, students will guide themselves through the problem-based inquiry task and process. The WebQuest will likely take 2-3 lessons to complete, perhaps 2 sessions in the computer lab for the WebQuest and 1 session in the classroom for the small group activity. The format is as follows:
 - **Introduction:** Students will read the engaging narrative and consider the problem.
 - **Task:** Students will read the instructions to **understand** the tasks they will undertake. Students will be arranged into small groups in advance of the lesson.
 - **Process:** Students will first research dehydration by reading the linked articles and watching the linked videos. When they have gathered the necessary information, they will write their 3-paragraph reports so that they have something to contribute to their small group activity.

4. Students Develop and Verify their Solutions

- The WebQuest format continues as follows:
 - **Process:** Students will have now completed their research and their reports. Now in their groups, they will **synthesize** their findings into a single poster that advertises sustainable hydration strategies. Each group will then present their posters to the whole class.
 - **Evaluation:** A rubric is included in the WebQuest for the 3-paragraph report, and additional points will be allotted for each student’s **self-evaluation** of their participation in the small group activity. Students may refer to this rubric at any time to familiarize themselves with the expectations for the assignment, though they will be directed to do so before beginning their report.
 - **Conclusion:** In addition to summarizing the themes of the WebQuest, students are reminded of the importance of hydration for their own sakes. A video (“Hydration Rap”) by a same-age student concludes the WebQuest.

Step 4 Guide Practice, Assess Performance, and Provide Corrective Feedback

Questioning – This strategy allows students to reflect on what they have learned about dehydration and to classify its effects on the body and mind.

- Students will fill out a graphic organizer to review what they have learned about the effects of dehydration on mental and physical activity. Students will work in pairs to fill in the blanks; not all answers will come directly from readings, so they may brainstorm specific **applications** together. Teacher will then ask for student input as they fill it out on the document camera or SmartBoard. This will provide the teacher an additional opportunity to clarify students’ misconceptions about dehydration and hydration.

Correcting errors – Make sure students understand that there is a difference between drinking water and drinking liquids that *contain* water (e.g., energy drinks, sodas, etc.). Clarify the possible misconception that caffeinated or sugary beverages sustain energy; in fact, caffeine contributes to dehydration and sugar will lead to an eventual crash.

Step 5 Assign Independent Practices, Assess Performance, and Provide Corrective Feedback

Students will implement one of the strategies from their group's poster in their daily life for one week, including a journal entry for each day that reflects on the experience. Students will record the strategy they tried, how successfully they implemented it, and whether they think it helped. This will allow students to monitor their own learning, and enables the teacher to have a running record of students' progress toward their health goals.

Step 6 Review Periodically – Build in review of lesson in future lessons (Provide ideas on how/when you might review the lesson)

California Physical Education Standard 4.6: *Record water intake before, during, and after physical activity* represents an ideal follow-up to this lesson. As students engage in future physical activity during PE, they can implement this self-reflective practice, thereby reinforcing the improvement of their hydration. Students will be familiar with this type of task because they already recorded their use of a hydration strategy during independent practice; now this practice will be applied specifically to physical activity.

7. Student Work Examples/Technology Support

- **Attach samples of student work.**
 - Samples of the research report are included beginning on the following page.
- **Add technology support**
 - WebQuest link: <http://zunal.com/webquest.php?w=201187>.
 - Articles/videos:
 - i. <http://www.functional-fitness-facts.com/effects-of-dehydration.html>
 - ii. <http://science.howstuffworks.com/environmental/earth/geophysics/h2o3.htm>
 - iii. <http://www.youtube.com/watch?v=z8HIsY6TUgk>
 - iv. <http://www.youtube.com/watch?v=mve0mVu5y5A>
 - v. <http://www.safekids.org/sites/default/files/documents/sports/DEHYDRATION%20SAFETY%20TIP%20SHEET%202013.pdf>

The Effects of Dehydration

Dehydration is a serious condition that happens when you don't drink enough water. But it is more than just feeling thirsty. It means that your body is losing more water than it is getting. Your body loses water in a few ways, like breathing, sweating, and urinating. If you're not drinking water or getting it some other way, then you may become dehydrated. This can affect your body and mind in several ways.

When you drink water, it gets absorbed into your blood stream, but when you don't get enough, your blood doesn't get enough water. This can make it get too thick, and your heart has to work harder to pump enough blood through your body. When your heart has to work harder, your other muscles have to work harder too. This can really make you tired. This affects your mind too, because your brain needs to get enough oxygen, which water has, and blood to work right. If your brain isn't working right, you won't be able to think very well. It's amazing that drinking water can help!

If you're wondering how you can start drinking more water, try a few of these strategies. The first one is to carry a water bottle that you can refill and reuse. You can buy them at most stores. Another strategy is to eat foods that contain a lot of water, like watermelon or soup. Also, you can drink a glass of water with every meal and drink one before you have a soda or coffee. Those kinds of drinks will make you dehydrated too. Finally, if you're going to exercise or do a physical activity, make sure you drink plenty of water before, during, and after.

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Dehydration

Dehydration is when you don't drink enough water. Your body needs water and if it doesn't get enough it will be dehydrated. If you run a lot you will sweat, this means you are losing water. You have to drink more to feel better.

It is bad for your body because your body could get too hot and need too much water. If you don't drink it, your heart could work too hard and maybe your kidneys can get damaged. If you're an athlete you might be ok. Also you could do bad in school because your brain didn't get enough water. It hurts your mind too.

I always drink water when I play sports, and sometimes gatorade. But water is better for me because it doesn't have sugar. Water doesn't taste good, but you need to drink it when you play sports. It's also a good idea to bring a water bottle with you when you go places so you don't get dehydrated if it's hot outside.

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Graphic Organizer

