Session 4

Evaluating Web-Based Resources
Acknowledgments

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Session 4

Evaluating Web-Based Resources

Objectives
1. Participants will increase their understanding of the importance of critically reviewing and using online resources to enhance student learning.
2. Through a review of online resources, participants will determine which Web resources may enhance students' understanding of identified concepts.

Facilities
• A room with Internet access, a data projector, speakers, tables, and space for participants to spread out in groups and work comfortably
• Electricity as required for powering participants’ computers

Equipment/Materials
• Computer and data projector for facilitator
• Laptop computers with Internet access (1–2 per group)
• Chart paper, chart stand, and markers

Software
• Internet browser
• Text-editing software, such as Microsoft Word

Facilitator Preparation
• Read the session guide and familiarize yourself with the activities and handouts 1–5.
• Make copies of the handouts or provide them in electronic form.
• Ensure adequate materials for all participants and groups.

Participants
Up to 25 teachers

Time Required
6 hours

Handouts
- 1: Internet Resources on Weed Control
- 2: Education Website Evaluation Questions
- 3: Education Website Evaluation Form
- 4: Internet Resources Evaluation Task
- 5: Internet Resources to Be Evaluated
• Preview the websites on pp. 4.6 and 4.7 to ensure the links are current. Bookmark each site.
• Review the BSCS 5Es Instructional Model (see Session 1: Handout 1).
• Review the related Texas Essential Knowledge and Skills (TEKS) Technology Applications standards listed at the end of this session.

Prerequisite Skills of Participants and Facilitator
• Basic computer skills
• Basic understanding of Web navigation
• Foundational understanding of problem- and project-based instruction

Grouping Strategy
Use a heterogeneous grouping strategy. Ensure that each group of four to five members includes a mix of math and science teachers as well as elementary school teachers who teach in self-contained classrooms.
Session Sequence

Students and teachers have a variety of resources available for instruction and research. With advances in technology, online resources are now becoming one of the primary methods for information gathering and research. In mathematics and science, an inherent component of integrated problem-based instruction is the research process to locate information necessary to resolve a problem or issue. The quality and accuracy of the source of the information is critical. Therefore, developing skills to distinguish and recognize the quality of online resources is essential.

Working primarily in groups, participants will be challenged with engaging tasks that focus on research and the subsequent utilization of Internet resources for problem-based instruction. Through these tasks, participants will engage in Internet research, examine multiple websites, and then discuss how to determine the quality of the resources. The challenge to participants, and later to students, will be to engage in quality control regarding the Internet resources used for instruction and research.

Table Groups

1. Place participants in heterogeneous groups of four to five members. Plan a 3-minute transition from whole group to table groups. Then present the following scenario:

   “Assume that you are a group of students with no knowledge of the activity topic. The teacher assigns your group the task of determining the definition of a “weed.” Your group will have 15 minutes to use the Internet to prepare a report that presents a group definition of a weed, a list of five websites your group used to develop the definition, and a brief description of the entire process.”

2. Groups should write the definition and list the five websites on chart paper to prepare for their presentation. Ask each group to choose a reporter (or a pair of reporters) to make the group’s presentation. As the audience listens to the presentations, make notes about the websites used by the groups. This step is important because participants will be revisiting the sites.

Individuals/Table Groups

3. Rather than presenting lectures to students, whenever possible teachers should encourage students to build their own personal knowledge. To present an example of this type of task, ask the participants to imagine they are students who have an upcoming science project that involves growing different vegetables in a
garden. One of the factors students must consider is weed control. Before implementing this step, however, the students need to discover the following information:

a. What is a weed?
b. Why is it important that weeds be eliminated or controlled?
c. What are three basic ways to control weeds?

4. Provide each group with a copy of Handout 1: Internet Resources on Weed Control. If possible, provide an electronic version of the handout per laptop to avoid potential problems with copying the Web links from a secondary source, such as a projector. The handout lists websites that represent the online resources students in the above scenario may have located and used to learn about weeds.

- Site 1: http://lawnCare.about.com/od/turfgrasspests/a/weedsexplained.htm
- Site 2: http://gardening.wsu.edu/library/weed001/weed001.htm
- Site 3: http://www.ag.ndsu.edu/pubs/plantsci/weeds/w1097w.htm

5. Ask the participants to examine each of the sites on Handout 1 for the following:

- Appropriateness
- Quality
- Accuracy

For the first 5 minutes, the participants should judge the sites individually without consulting with other group members. Instruct participants to take notes to support their evaluations and rationale. Then ask the group members to discuss each site and compare notes on the appropriateness, quality, and accuracy of the content. For each site, members should decide on a group evaluation and a rationale for the evaluation, and then record the results on chart paper.

6. Tell the participants that a whole-group review and discussion of their evaluations will be postponed until a later culminating activity.

Whole Group

7. Tell participants that Internet sites can be highly instructional. However, they must be used appropriately and be deliberately incorporated into instruction to support student learning. For example, many websites provide visual representations that may help students understand a concept. If students sometimes have difficulty visualizing transformations of objects, the visual representation of different transformations makes an abstract concept more concrete and understandable. Refer to the following as examples of how interactive and visual representations can help students understand the three basic types of transformations:

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**Equipment/Materials**

- Computer with Internet access and data projector for facilitator
- Laptops with Internet access (1–2 per group)
- Chart paper, stand, and markers for facilitator

8. Using the computer, access the Rice Knowledge Bank website at http://www.knowledgebank.irri.org/ipm/weed-management/weed-management-options.html. This site is an example of a virtual aid that can help students visualize what happens in the crop management cycle, which includes weed control. Discuss the relevant portions of the cycle.

9. Addressing the whole group, ask participants for their evaluation of the appropriateness, quality, and accuracy of this particular website. Request that participants provide justifications for their opinions. Record the responses on chart paper.

10. Explain that videos are an increasing component of the Internet and that many of them have educational applications. YouTube is a popular site that provides educational videos that students can use when an expert is not available. Such videos can play a valuable role in student learning.

11. Tell participants, “Suppose you have students who want to test an organic weed control method, and several students have found the following YouTube video.” Show this video on organic weed control and ask the participants to take notes regarding the quality and accuracy of its content: http://www.youtube.com/watch?v=ad727U4g2oQ.

This video provides a brief explanation of how to use newspaper to control weeds, including showing how to place the newspaper to gain maximum benefit. Participants should notice that one of the features of YouTube is that related videos (if available) appear on screen as well. By examining these related items, students (or teachers) may be able to find additional videos that further clarify the topic in the initial video.

12. Repeat the process with the following YouTube video on weed control and elimination: http://www.youtube.com/watch?v=mO5m3gK5YW4&feature=related.

13. Addressing the whole group, ask the participants their evaluation of the quality and utility of each video. Again, request that participants provide justifications for their opinions. Record the responses for each video on a separate sheet of chart paper.

Table Groups

14. Lead a discussion about the challenges teachers face in finding time to evaluate websites that students may utilize as resources. Then explain that even though finding the time can be difficult, building a library of rich and engaging websites that students can use as resources will pay off with long-term benefits. And by working with other teachers in a professional community to share the work, the individual burden of time and effort is eased.
15. Say, “Evaluating the quality, accuracy, and utility of a website is a high priority for educators, particularly regarding content validity, the credibility and objectivity of the author or source, and the appropriateness of the content. Other factors to consider include format and ease of navigation.”

Explain that many online resources offer generic advice on how to evaluate the quality of a website. Several criteria appear repeatedly across these resources, and the following are some primary areas of consideration for evaluating websites to enhance student learning:

- Credibility and objectivity of the author or source
- Accuracy of the content
- Currency of the information
- Appropriateness and relevance of the content
- Access, format, and ease of use

16. Write the above list for participants to see. Then have them work in their groups to develop questions for each category that would help determine whether Web resources should be used for learning. (You might assign each group one or more categories for this task.) For example, for currency of the information, the following questions would be useful:

- When was the page or site produced? When was it last updated?
- Are links, if any, current and updated regularly? Are any links outdated?

Give the groups 30 minutes for the task. Allow them to use online resources for assistance.

**Whole Group**

17. Ask the groups to share their questions with the whole group. List the questions on chart paper. After each category, ask if participants have any other suggestions.

18. Give each participant a copy of Handout 2: Education Website Evaluation Questions, which provides the following synopsis of criteria for each category. Have participants review the questions and discuss any point not covered in the report-out session.

**Credibility and objectivity of the author or source**

- Does the site clearly list the individual(s) or organization(s) that created or contributed to the site and provide information about them and the purpose of the site (such as on an “About” page)?
- Does the site provide information regarding the qualifications or expertise of the individual(s) or group(s) that created the site?
- Does the site provide a means of making comments, asking questions, or communicating with the author(s)? Does the site give or cite sources for information where appropriate?
- Does the content reflect an explicit or hidden bias?
- Is the advertising, if any, limited and appropriate for the audience?
- Anyone can produce a website, but the address can help indicate the nature of the source. A site with a tilde (~) in the address usually indicates that it was created by an individual, and “.com” usually indicates a commercial business. Federal government sites often end in “.gov” and educational sites often include “k12” or “.edu” in the address.

**Accuracy of the content**

- Is the content consistent with other resources?
- Is the content based on the input of one expert or several sources?
• Are the qualifications of the source noted and accessible?
• Are there inconsistencies and mistakes in the content? (Sometimes spelling and grammar may be an indicator of quality and accuracy.)
• Is the content general in nature, or does it include specific details, explanations, proofs, and so on?

Currency of the information

• When was the page or site produced? When was it last updated?
• Are links, if any, current and updated regularly? Are any links outdated?

Appropriateness and relevance of the content

• Can the content be easily read and understood by the intended audience?
• Is the purpose of the site clearly expressed and reflected by its content?
• Is there enough relevant content to make visiting the site worth the effort?
• Does the site contain interactive elements, such as animations, videos, and activities that go beyond text and images to engage and enhance learning?

Access, format, and ease of use

• If the site contains large amounts of content, is there an index of topics or a search function to help users find topics and information easily?
• Is the site text only or a balance of text and images?
• Can users navigate the site easily?
• Is the site cluttered with graphics, fonts, and backgrounds that may distract from reading and understanding?
• Does the site present content in any way that may limit access to viewing it?
• Are there clear instructions for any interactive features, such as games, animations, and assessments?
• Is the site consistently available, and does it load without problems?
• Does the site require users to provide personal information or pay for use?
• Are accessibility and ease of use helped by features on the site, such as transitional pages, searchable databases, and animations?
• Does the site contain a “Help” section or link where users can ask questions regarding use, navigation, contents, and so on?

Remind participants that a website does not have to meet every one of these criteria to be a good resource. Of course, the more criteria a site meets, the better and the more reliable it will be as a teacher or student resource.

Table Groups

19. Provide each participant with an electronic copy of Handout 3: Education Website Evaluation Form. This handout provides a framework that teachers may use to judge the quality of a possible Internet resource to inform or enhance classroom instruction of subject content. The details in the framework are left open for users to fill in with the criteria they deem most relevant.

20. Ask the groups to use the framework to evaluate the Internet resources used in the following activities during this session:
a. Activity on the definition of a weed (Steps 1–2)
b. Activity focused on weeds and weed control (Step 4)
c. Website on crop cycles (Step 8)
d. Video on organic gardening and weed control (Step 11)
e. Video on weed control and elimination (Step 12)

Whole Group

21. Lead a whole-group discussion and compile a list of the groups’ criteria for evaluating the Internet resources. If a critical factor or question is not included, recommend it. The responses should cover the criteria listed in Handout 2.

Equipment/Materials

- Laptops with Internet access (1–2 per group)
- Handout 4: Internet Resources Evaluation Task (1 electronic copy per participant)
- Handout 5: Internet Resources to Be Evaluated (1 electronic copy per participant)

Individuals or Table Groups

22. Ask the participants to use the criteria compiled in the previous step to evaluate 10 Internet resources they might use. The ratings or assessments must be accompanied by justifications. Depending on time constraints, the task may be completed in groups for 30 minutes during the session, or it can be assigned as an individual outside task and reviewed at a later session.

Provide each participant with electronic copies of Handout 4, which explains the evaluation task, and Handout 5, which lists 10 websites to evaluate. As an alternative, participants might evaluate 10 other websites that align with their upcoming instruction.

Task – From Handout 4:
You have been provided with links to several webpages that focus on either mathematics, science, or technology. For each one, do the following:
1. Evaluate the quality and accuracy of the webpage based on criteria developed in this session.
2. Determine whether the page's content and utility is of low or high quality.
3. Explain why you made that evaluation.

Whole Group

23. Reflection. Lead a discussion about what participants learned and how they could utilize this activity.

a. Ask participants to consider ways in which the tasks in this activity could be utilized in their specific classrooms with their individual students.
b. Ask participants to reflect on the types of questions they were asked during the activity and on the types of questions (Bloom's Taxonomy—i.e., emphasis on justification and explanation of the solution process) they would ask when teaching the content of this session.
– What do they think is different about these types of questions?
– What differences, if any, might there be in student responses to these questions than to those they typically ask their students?
– How do these types of questions promote student learning?

24. Ask the participants to reflect on the Web-based activities.
   • How might such activities be used in conjunction with an outdoor learning experience?
   • How was technology incorporated in this session?
   • How could this model be used to help engage all students and facilitate learning?

25. Quickly review the BSCS 5Es Instructional Model (Session 1: Handout 1). When was each phase of the model implemented? Explain how each phase built upon what was addressed in the phase before it.

26. Ask the participants to share some of their strategies for making modifications for English language learners or students with disabilities.

**Technical Assistance Follow-Up**

The technical assistance provider will individually contact the participants after they return to their classes.

• Ask how they are integrating math, science, and technology.
• Ask when this integration has occurred.
• Ask what they need to do or have to integrate mathematics, science, and technology in their lessons.
**Texas Essential Knowledge and Skills (TEKS)**

Note: The focus of this learning opportunity is on using appropriate Internet resources to increase students’ science and mathematics content knowledge. Consequently, the applicable TEKS will be determined by how and where the session’s information is applied. However, because of the focus of the session, Technology Applications TEKS are readily identified.

§126.3. Technology Applications

(b) Knowledge and skills.

(3) Foundations. The student complies with the laws and examines the issues regarding the use of technology in society. The student is expected to:

(A) follow acceptable use policies when using computers; and

(B) model respect of intellectual property by not illegally copying software or another individual’s electronic work.

(4) Information acquisition. The student uses a variety of strategies to acquire information from electronic resources, with appropriate supervision. The student is expected to:

(A) apply appropriate electronic search strategies in the acquisition of information including keyword and Boolean search strategies; and

(B) select appropriate strategies to navigate and access information on local area networks (LANs) and wide area networks (WANs), including the Internet and intranet, for research and resource sharing.

(7) Solving problems. The student uses appropriate computer-based productivity tools to create and modify solutions to problems. The student is expected to:

(A) use software programs with audio, video, and graphics to enhance learning experiences;

(B) use appropriate software to express ideas and solve problems including the use of word processing, graphics, databases, spreadsheets, simulations, and multimedia; and

(C) use a variety of data types including text, graphics, digital audio, and video.

(11) Communication. The student delivers the product electronically in a variety of media, with appropriate supervision. The student is expected to:

(A) publish information in a variety of media including, but not limited to, printed copy, monitor display, Internet documents, and video; and

(B) use presentation software to communicate with specific audiences.

(12) Communication. The student uses technology applications to facilitate evaluation of communication, both process and product. The student is expected to:

(A) select representative products to be collected and stored in an electronic evaluation tool;

(B) evaluate the product for relevance to the assignment or task; and

(C) create technology assessment tools to monitor progress of project such as checklists, timelines, or rubrics.


References