Pearson New International Edition

Instructional Technology
and Media for Learning
Smaldino   Lowther   Russell

Tenth Edition

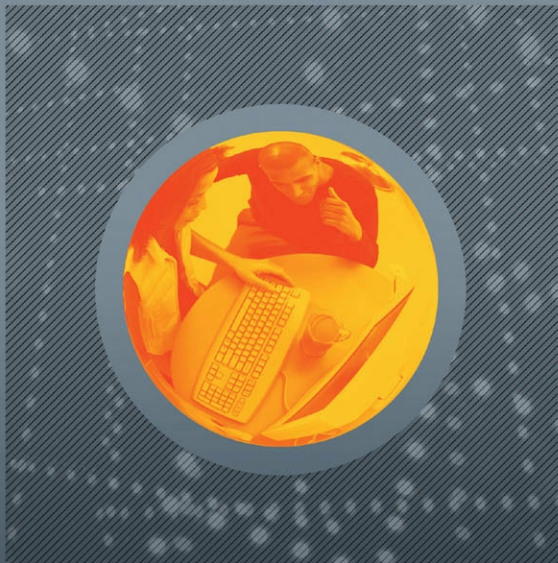ALWAYS LEARNING   PEARSON

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INTERACTIVE MULTI-TOUCH DESKS

Classrooms of the future will no longer have desks and separate laptops. Interactive multi-touch desks resemble the navigational interface used in the TV series "Star Trek." The screen serves as an individual workspace, an interactive whiteboard, and a collaboration tool for several students. Students use fingers or pens to interact with the desk and can define their own space with an icon or avatar. The desks are connected through a fully interactive classroom system, which is monitored with a teacher's console that can also be used to view student work on every screen or display example work.

Interactive Multi-Touch Desks, developed by SynergyNet, provide an intuitive interface accessed with fingers or pens.

Courtesy of Durham University

SUMMARY

In this chapter we explored the differences between teacher-centered and student-centered instruction and discussed in detail ten commonly used instructional strategies. We included advantages and disadvantages of each and provided multiple examples for integrating the strategies into your classroom. We also emphasized how to include specific technology, media, and materials to enhance student learning. We examined five contexts for learning commonly found in PK–12 education: face-to-face classroom instruction, distance learning, blended instruction, independent study (structured), and informal study (nonstructured). The chapter ended with a discussion of the types and sources of free and expensive materials.

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To check your comprehension of the content covered in Chapter 4, go to the **MyEducationKit** for your book, and complete the Study Plan for Chapter 4. Here you will be able to take a chapter quiz, receive feedback on your answers, and then access resources that will enhance your understanding of the chapter content.

ASSURE Lesson Plan

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The following ASSURE Lesson Plan provides a detailed description and analysis of the lesson in the ASSURE Classroom Case Study and video at the beginning of the chapter. To review the video again, go to the MyEducationKit for your text and click on the ASSURE Video under Chapter 4. The video explores how Ms. Lindsay Kaiser and Ms. Jena Marshall implement a Lewis and Clark lesson in which fifth-grade students complete a WebQuest and design a "Lewis and Clark" boat.

Analyze Learners

General Characteristics. Ms. Kaiser and Ms. Marshall's fifth-grade students are of mixed ethnicities and from middle-income homes. They are fairly equally distributed with regard to gender

Achieving 21st Century Learning Environments

and are all either 10 or 11 years old. All students are reading at or above grade level. Student behavior problems are minimal.

Entry Competencies. The fifth-grade students are, in general, able to do the following tasks required to complete the lesson activities:

- Conduct an Internet search
- Create and save word processing documents
- Create and save documents with publishing software (e.g., MS Publisher)
- Use graph paper to draw images to scale

Learning Styles. The fifth-grade students learn best when engaged in hands-on activities that are interesting and challenging. The students' level of interest and motivation increases when working as a team to win a competition. The students vary in the style with which they prefer to demonstrate their learning. For example, when creating the boat advertisement, some students prefer to write the content, whereas others choose to select and arrange photos and images to express their ideas.

State Standards and Objectives

Curriculum Standards. National Center for History in the Schools, United States Grades 5–12 Standards, Era 4 Expansion and Reform (1801–1861): Standard 1: United States territorial expansion between 1801 and 1861, and how it affected relations with external powers and Native Americans; Standard 1A: The student understands the international background and consequences of the Louisiana Purchase.

Technology Standards. National Educational Technology Standards for Students 3.B—Research and Information Fluency: Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. Reprinted with permission from *National Educational Technology Standards for Students* © 2007, ISTE (International Society for Technology in Education, www.iste.org). All rights reserved. National Center for History in the Schools, http://nchs.ucla.edu

Learning Objectives

1. Given Internet resources and drawing materials, pairs of grade 5 students will design a boat appropriate for the challenges faced by Lewis and Clark during their expedition (e.g., able to withstand rough currents while portable enough for carrying across rugged terrain).
2. Using the student-created boat design, pairs of grade 5 students will create an advertisement for their Lewis and Clark boat that clearly defines the reasons why it fulfills the requirements of suitability for the Lewis and Clark expedition.
3. Using the student-created boat design, pairs of grade 5 students will write a persuasive letter to the president of a boat manufacturing company about why their Lewis and Clark boat should be produced by the company.

Select Strategies, Technology, Media, and Materials

Select Strategies. Ms. Kaiser and Ms. Marshall select four student-centered strategies: discussion, problem solving, discovery, and cooperative learning. Examples include working in cooperative pairs to complete a WebQuest, conducting Internet searches for information on boats used by Lewis and Clark, designing the boat, creating an advertisement to sell the boat, and writing a letter to the president of a boat manufacturing company.

Select Technology and Media. This lesson involves student use of Internet-connected computers, the Lewis and Clark WebQuest, an Internet browser to locate information about boats, publishing software to create the advertisement, library resources, and word processing tools to write the letters. Students might also need access to a scanner to copy paper-based photos for their advertisements.

- *Align to standards, outcomes, objectives.* The WebQuest, Internet and library resources, and production software (publishing and word processing) provide the necessary tools for students to meet the learning objectives.
- *Accurate and current information.* Students will access multiple resources of Lewis and Clark information, which will allow the students to crosscheck content accuracy. Current information may be used for new ideas on building handmade boats with tools available at the time.
- *Age-appropriate language.* The WebQuest is written at an appropriate level for fifth-grade students. The teacher may need to assist with interpretation of some web-based resources.
- *Interest level and engagement.* The combined use of the WebQuest, the boat design, and advertisement competition will keep student interest and engagement at a high level.
- *Technical quality.* The WebQuest and production software used by the students are of high technical quality.
- *Ease of use.* The WebQuest is designed for fifth-grade students. Students can easily use word processing software; however, the publishing application may require initial training and support.
- *Bias free.* The WebQuest and production software are bias free.
- *User guide and directions.* The online help features of the WebQuest and production software are fairly easy for fifth-grade students to use. However, students most frequently will ask each other, Ms. Kaiser, or Ms. Marshall for assistance with technical difficulties.

Select Materials. Ms. Kaiser and Ms. Marshall selected the WebQuest on Lewis and Clark because it provides information needed for students to achieve the learning objectives. They met with the media specialist to create a special collection of relevant resources and preselected example websites that provide grade-appropriate Lewis and Clark information.

Utilize Technology, Media, and Materials

Preview the Technology, Media, and Materials. Ms. Kaiser and Ms. Marshall preview the WebQuest and an online bookmarking site to list relevant Internet resources.

Prepare the Technology, Media, and Materials. Ms. Kaiser and Ms. Marshall prepare the lesson instructions and rubrics for the boat design, letter, and advertisement. They add the WebQuest link and Internet resources links to Lewis and Clark information on the class webpage.

Prepare the Environment. Ms. Kaiser and Ms. Marshall check the classroom laptops to ensure the Internet connections are functional and that the publisher software is loaded on all machines. They retrieve the library cart with Lewis and Clark material and set out all instruction sheets and rubrics for the lesson.

Prepare the Learners. Ms. Kaiser and Ms. Marshall provide a brief overview of U.S. history studied up to the 1800s to provide a context for learning about the Lewis and Clark expedition. They also ask students to share personal boating experiences and projects in which they designed or built a model.

Provide the Learning Experience. Ms. Kaiser and Ms. Marshall begin the class by presenting a brief introduction to Lewis and Clark and the historical background of the time. They then present the boat competition challenge and explain how the lesson activities are structured.

Require Learner Participation

Student Practice Activities. The students in Ms. Kaiser and Ms. Marshall's class use computers, the Internet, and word processing and publishing software to complete their work assignments. Each student individually completes the Lewis and Clark WebQuest. Students then join their partners and conduct research using the Internet and resources from the library cart. The goal is to locate additional information about the Lewis and Clark boats and boat construction. This research allows

students to crosscheck information learned in the WebQuest. The students use the information to design their boat, create the advertisement, and write their letter. All the activities provide opportunities for the students to engage in practice and relearning of Lewis and Clark information.

Feedback. Ms. Kaiser and Ms. Marshall provide ongoing feedback to students as they conduct Internet and library information searches, draft beginning boat designs, and write the first drafts of their letters to the boat manufacturer. Student use the rubrics (see next section) for these three products to check progress and focus of the work.

E valuate and Revise

Assessment of Learner Achievement. Ms. Kaiser and Ms. Marshall use the rubrics to assess each team's final boat design, advertisement, and letter. The rubrics assess demonstration of content knowledge, as seen in the students' advertisements and letters and in their technology skills. Ms. Kaiser and Ms. Marshall assess these skills by evaluating the final student advertisements and letters according to the assignment criteria.

Evaluation of Strategies, Technology, and Media. Ms. Kaiser and Ms. Marshall evaluate the strategies, technology, and media. Evaluation of the lesson strategies involves reviewing the students' final products to determine the degree to which students have met the learning objectives. They also engage in continuous communication with the students to learn what is working and identify areas of needed improvement. Ms. Kaiser and Ms. Marshall regularly communicate with the school's technology support staff regarding technology upkeep and problems.

Revision. Ms. Kaiser and Ms. Marshall review the information collected from evaluation of the lesson strategies, technology, and media. The evaluation shows that the Lewis and Clark WebQuest was an excellent source of information to guide the remaining boat design activities. However, students struggled with writing the persuasive letter. Ms. Kaiser and Ms. Marshall revised the lesson to include a review and practice for writing persuasive letters.

Continuing My Professional Development

Demonstrating Professional Knowledge

1. Differentiate between teacher-centered and student-centered learning strategies.
2. Compare and contrast the advantages and limitations of ten types of learning strategies.
3. Describe how to select technology and media that facilitates learning experiences.
4. Discuss the types of learning environments and settings you might encounter in PK–12 schools.
5. List the advantages and limitations of integrating free and inexpensive materials into instruction.

Demonstrating Professional Skills

1. Develop a table that lists the ten types of instructional strategies in the first column. In the second column write a brief description of how you could use each strategy in an ASSURE lesson. (ISTE NETS-T 2.A & 2.B)
2. Using the table developed for Item 1, add a third column to the table that describes how technology can be used to support each of the ten learning experiences. (ISTE NETS-T 2.A & 2.B)
3. Design an ASSURE lesson for one of the learning contexts and settings. (ISTE NETS-T 2.A & 2.B)
4. Using the district or state curriculum guide from the grade level and subject area that you teach or plan to teach, create an annotated list of free and inexpensive resources you could integrate into your teaching and describe how you could use the resources. (ISTE NETS-T 5.C)

Building My Professional Portfolio

- *Creating My Lesson.* Using the ASSURE model, design a lesson for one of the case studies presented in the Case Study Chart in the Lesson Scenario Chart appendix or use a scenario of your own design. Incorporate into your lesson one or more of the instructional strategies and technology and media ideas described in this chapter. Choose a learning context appropriate for your lesson. Carefully describe the audience, the objectives, and all other elements of the ASSURE model. Be certain to match your intended outcomes to state or national curriculum and technology standards for your content area.

- *Enhancing My Lesson.* Using the lesson you created in the previous activity, consider how to meet the needs of students with varying abilities. What adaptations are needed to keep advanced learners actively engaged while helping students who struggle with reading? What changes are needed to ensure that students transfer knowledge and skills to other learning situations? You might look for free and inexpensive resources to enhance the lesson. How can you integrate additional use of technology and media into the lesson?

- *Reflecting on My Lesson.* Reflect on the process you have used in the design of your lesson and your efforts at enhancing that lesson to meet student needs within your class. How did information from this chapter about instructional strategies, learning contexts, and free and inexpensive materials influence your lesson designing decisions? In what ways did the technology and media you selected for your lesson enhance the learning opportunities for your students?

SUGGESTED RESOURCES

Print

Conklin, W. (2007). *Instructional strategies for diverse learners*. Huntington Beach, CA: Teacher Created Materials.

Elementary teachers guide to free curriculum materials (67th ed.). (2010). Randolph, WI: Educators Progress Service.

Herr, N. (2008). *The sourcebook for teaching science, grades 6–12: Strategies, activities, and instructional resources*. San Francisco: Jossey-Bass/Wiley.

Hoffner, H. (2007). *The elementary teacher's digital toolbox*. Upper Saddle River, NJ: Merrill/Prentice Hall.

Lengel, J. G., & Lengel, K. M. (2006). *Integrating technology: A practical guide*. Boston: Allyn & Bacon.

Middle school teachers guide to free curriculum materials (12th ed.). (2010). Randolph, WI: Educators Progress Service.

Nash, R. (2009). *The active classroom: Practical strategies for involving students in the learning process*. Thousand Oaks, CA: Corwin.

SchifferDanoff, V. (2008). *Easy ways to reach & teach English language learners: Strategies, lessons, and tips for success with ELLs in the mainstream classroom*. New York: Scholastic.

Secondary teachers guide to free curriculum materials (119th ed.). (2010). Randolph, WI: Educators Progress Service.

Web Links

To easily access these web links from your browser, go to the MyEducationKit for your text, then go to Chapter 4 and click on the web links.

The Federal Reserve Board

www.federalreserve.gov/kids

This website is designed to inform students aged 11 to 14 about the role of the Federal Reserve Board, why it was created, and its primary responsibilities. The site includes a built-in assessment.

Leon M. Lederman Science Education Teacher Resource Center

http://ed.fnal.gov/home/educators.shtml

The U.S. Department of Energy collaborated with Fermi National Accelerator Laboratory to develop a teacher resource center. Teachers can explore a variety of mathematics and science materials developed to enhance PK–12 education.

Resources to Help ELL Students

www.mcsk12.net/SCHOOLS/peabody.es/ell.htm

This page, created by Judie Haynes, provides suggested strategies for using online activities and games to assist ELL students to increase their understanding of English and improve their language skills each time they visit a site.

The Whole Frog Project

http://froggy.lbl.gov

The U.S. Department of Commerce collaborated with a variety of publicly supported science labs across the United States to prepare instructional materials for teachers and students in science areas such as astronomy, biology, earth science, and environmental control.

Selection Rubric:
SIMULATIONS AND GAMES

Search Terms Used to Locate Resources

_____

_____

_____

Title _____

Source/Location _____

©Date _____ Cost _____

Subject Area _____ Grade Level _____

Learning experiences _____

Primary Format

_____ Simulation

_____ Game

Primary User(s)

_____ Student

_____ Teacher

Brief Description

Standards/Outcomes/Objectives

Prerequisites (e.g., prior knowledge, reading ability, vocabulary level)

Strengths

Limitations

Special Features

Name _____ Date _____