

## Pedagogical Practices

### Using Questioning to Promote Higher-Order Thinking and Engage Students ..... 7.01

**Discuss:** Ways you can use questioning techniques to help your students think at a deeper level

## Activities

### Activity 1: Designing Facilitation Resources ..... 7.04

**Review:** Technology standards

**View:** Sample facilitation materials

**Plan:** Facilitation materials that increase productivity and/or support instructional practice

**Create:** Facilitation materials

### Activity 2: Implementing a Successful Project ..... 7.07

**Complete:** Instructional Procedures

**Discuss:** Implementation of your project

**Create:** Management document

### Activity 3: Reflecting on My Unit as a Whole ..... 7.10

**Review:** A Unit Plan Checklist and Portfolio Rubric

**Note:** Components to add or modify in a Unit Portfolio

## Planning Ahead

### Activity 1: Revising My Unit Portfolio ..... 7.11

**Review:** Your Unit Plan Checklist and Portfolio Rubric

**Revise:** Your Unit Portfolio

### Activity 2: Reflecting on Professional Development ..... 7.12

**Explore:** Opportunities for further professional development

### References ..... 7.13

### Module Summary ..... 7.14

# Module 7 Overview

---

## Facilitating with Technology

## Module 7

# Facilitating with Technology

**Description:** Now that the goals for your unit are well-defined, and assessment strategies are in place, you can focus on student-centered teaching strategies. In this module, you discuss how to facilitate a classroom in a project-based learning environment as well as how to use technology to increase your own productivity or support your instructional practice. You then create a document, presentation, or web-based resource. You also plan how to implement your unit in your classroom and create management resources to support students while they work with technology on their projects.

## Pedagogical Practices: Using Questioning to Promote Higher-Order Thinking and Engage Students

As teachers talk less, and students talk more in the classroom, the role of questions in the classroom changes. In teacher-centered classrooms, students often answer questions the teacher knows the answer to, and students rarely ask important questions themselves. In student-centered classrooms, learning is guided, first by Curriculum-Framing Questions, and then by authentic questions that rise out of meaningful work with the content.

Facilitating student interaction through questioning is at the heart of good teaching. In this Pedagogical Practices discussion, you consider ways to meet this challenge using the key ideas and learnings from your previous work in the course.

Good questions are key to sparking thought-provoking answers whether in whole-class or small-group discussions, or in one-on-one conferences with students. Effective questioning engages students in productive discussions that result in products and performances that reflect complex thinking processes and deep understanding of content.

“Good questions elicit interesting and alternative views and suggest the need to focus on the reasoning we use in arriving at and defending an answer, not just whether our answer is ‘right’ or ‘wrong.’ Good questions spark meaningful connections with what we bring to the classroom from prior classes and our own life experience” (Wiggins & McTighe, 2005, p. 107).

In previous modules, you created Curriculum-Framing Questions for your unit. Think about ways to use questioning techniques and your Curriculum-Framing Question to involve your students and help them to think at a deeper level.

Your facilitator may choose to have you brainstorm ideas on this topic in a wiki in order to more easily capture and share ideas from each group. If so, use the same wiki as was used in Module 3. Your login information may be located on page vii or in your Login Information document.

Facilitating with Technology



Break into three groups, with each group discussing one of the following questions, and then share your ideas with the whole group:

- 1. What are some ways that you can integrate the use of Curriculum-Framing Questions into your classroom and student projects?

**Optional:** You may want to view the Intel® Education *Designing Effective Projects* resource for information on using Curriculum-Framing Questions in the classroom:



- a. Go to: [www.intel.com/education/DesignProjects](http://www.intel.com/education/DesignProjects)
- b. Click **Project Design**.
- c. Click **Curriculum-Framing Questions**.
- d. Click **Effective Questioning Practices**.
- e. Review the information and examples on ways to integrate Curriculum-Framing Questions into your unit.

- 2. What are some ways that you can integrate the use of questioning into your classroom and student projects?

**Optional:** You may want to view *Designing Effective Projects* for information and strategies for building a classroom environment in which students ask and answer good questions:



- a. Go to: [www.intel.com/education/DesignProjects](http://www.intel.com/education/DesignProjects)
- b. Click **Thinking Skills**.
- c. Click **Teaching Thinking**.
- d. Click the link in the body of the paragraph for **Creating a Thoughtful Classroom Environment**.
- e. Review the information and examples on ways to use questions to promote a thoughtful classroom.



Activity 1: Designing Facilitation Resources

Teacher and student roles are different in a student-centered, project-based classroom. Since teachers spend less time dispensing information, they have to be organized and creative to ensure that students understand the content they need. Teachers in student-centered classrooms listen to students and observe them as they work, while keeping instructional goals in mind. Creating tools to help you collect, interpret, and use information about students can help you stay more focused on student learning. In this activity, you consider how technology can support you and your students as you transition to these new roles.

Step 1: Considering NETS-T Standards

The International Society for Technology in Education (ISTE) identifies six areas in their technology standards for teachers (NETS-T) that “define the fundamental concepts, knowledge, skills, and attitudes [that teachers should use] for applying technology in educational settings” (2000). One of those main strands relates to teachers using “technology to enhance their productivity and professional practice” (Standard V).

Just as students should use technology to enhance their learning, increase productivity, and promote creativity, teachers should also use technology to support their instructional practice and improve their productivity.

In previous modules, you practiced using various technology tools. Use the following table to review areas you are most interested in pursuing further to help you improve your practices and productivity.

During this activity, you review sample facilitation materials for ideas on how to create resources for your unit. You learn about embedding, hyperlinking, and using document reviewing tools. Then, you create a document, presentation, spreadsheet, or web-based resource that supports the needs of your unit.

**Note:** At the time of this writing (Spring 2008), revised NETS-T standards are in review and will be available in the second half of 2008.

## Facilitating with Technology

## NETS-T Standards Checklist

Interested in Applying	Category/NETS-T Performance Indicator
<input type="checkbox"/>	1. Apply technology-enhanced instructional strategies to more efficiently support the diverse needs of learners (NETS-T IIA)
<input type="checkbox"/>	2. Identify and locate technology resources and evaluate them for accuracy and suitability (NETS-T IIC)
<input type="checkbox"/>	3. Facilitate technology-enhanced experiences that address content standards and student technology standards (NETS-T IIIA)
<input type="checkbox"/>	4. Use technology resources to collect and analyze data and interpret results (NETS-T IVB)
<input type="checkbox"/>	5. Apply multiple methods of assessment to determine students' appropriate use of technology resources for learning, communication, and productivity (NETS-T IVC)
<input type="checkbox"/>	6. Use technology resources to communicate findings to improve instructional practice and maximize student learning (NETS-T IVB)
<input type="checkbox"/>	7. Use technology to communicate and collaborate with peers, parents, and the larger community in order to nurture student learning (NETS-T VD)
<input type="checkbox"/>	8. Apply technology resources to more appropriately and efficiently enable and empower learners with diverse backgrounds, characteristics, and abilities (NETS-T VIB)
<input type="checkbox"/>	9. Grow in my technology knowledge and skills and stay abreast of current and emerging technologies (NETS-T IB)
<input type="checkbox"/>	10. Use technology resources to engage in ongoing professional development and lifelong learning (NETS-T VA)
<input type="checkbox"/>	11. Evaluate and reflect on professional practice to make informed decisions regarding the use of technology in support of student learning (NETS-T VB)

**Note:** This checklist is available in Module 7, Activity 1, Step 1: Considering NETS-T Standards of your Notebook.

Facilitating with Technology

Step 2: Planning My Facilitation Resource

A facilitator in a student-centered classroom organizes resources in a way that guides students and helps them learn how to learn (Nanjappa & Grant, 2003). The following instructional strategies are used in student-centered classrooms:

- Small group activities, such as creating graphic organizers, role-playing, and engaging in dramatizations, ensure that students understand core concepts.
- Instruction in and modeling of skills critical for the project provides students with opportunities to practice new skills in meaningful contexts.
- Additional activities and skills instruction, based on formative assessment during the unit, address content and skills challenges.

As you view examples of facilitation resources, think about your own style as a facilitator. Look for ways in which you can move to a facilitator role and provide appropriate scaffolding so that students can take a more self-directed, active role in their learning.



1. Browse sample presentations, publications, spreadsheets, and web-based resources located in the *Facilitation* folder on the Curriculum Resource CD.
2. Access teacher-created blogs and wikis on the Web from links available in the *Facilitation Examples* folder on the Curriculum Resource CD.
3. Take notes on any ideas you find that you could use in your unit.

Step 3: Creating Facilitation Materials

1. Keeping your planning ideas in mind, create a new document, presentation, or web-based resource to support the facilitation of your unit. If desired, modify any existing support material.
2. Depending on which technology tool you choose to use for the creation of your facilitation material, refer to the following resources, as needed:



- The Intel® Education *Help Guide* to assist you in the creation of a document, spreadsheet, or presentation



- Online resources (FAQs, forums, and getting started instructions) for creating a wiki or blog—view applicable Web sites in the *Collaboration* folder on the Curriculum Resource CD



3. Save your facilitation resource in the *unit\_support* folder in your Portfolio folder.



## Activity 2: Implementing a Successful Project

In this activity, you complete your Unit Plan and think about implementing your unit.

### Step 1: Completing My Instructional Procedures

You have now drafted all the sections of your Unit Plan! After some final revisions and polishing, it will be ready to share with your colleagues and then to use in your classroom. In this step, you refine your Instructional Procedures section and complete your Unit Plan Summary.

1. Open your Unit Plan and the Unit Plan Checklist from the *unit\_plan* folder in your Portfolio folder.
2. Complete your Instructional Procedures section. Describe what happens during the unit using concrete terms. Specify how you will incorporate the following into your instruction:
  - Formal and informal assessment throughout the instructional cycle
  - 21st century skills instruction
  - Differentiation
  - Student self-direction
  - Essential, Unit, and Content Questions
3. Review your Instructional Procedures for timing and flow.
4. Complete your Unit Plan Summary, making sure it presents a concise overview of your unit and includes:
  - Subject topics that will be covered
  - Description of the main concepts learned
  - Brief explanation of how the activities help students answer the Curriculum-Framing Questions
5. Review the rest of your Unit Plan and complete all other areas.

Step 2: Planning for a Successful Project

When you completed your Unit Plan’s Instructional Procedures section in the last step, you provided details on what will happen in your classroom during the unit. You also may have considered what you would need to prepare to make sure all activities run smoothly. For example, you might have thought about what kinds of equipment your students would need to complete the project, what mentors or experts you might need to invite, or how you would group students during different activities. During this step, you consider what you need to prepare and accomplish before, during, and after your unit to ensure its success.

**Note:** This planning area is available in Module 7, Activity 2, Step 2: Planning for a Successful Project in your Notebook.

1. Think about how you could address the following topics to ensure a successful project in your classroom. Exchange your ideas in small groups.
- Communicating about the project

o Project introduction

o Expectations, key tasks, and responsibilities

o Celebration and wrap-up

▪ Timing and transitions

o School schedule

o Student attendance

▪ Collaboration

o Group size

o Types of groups

o Managing and monitoring groups

## Facilitating with Technology

- Materials/Equipment/Technology/Outside Resources/Facilities
    - o File management
    - o Field trips
    - o Guests
    - o Extra Help (mentors, student aides, resource staff, and library/media)
- 
- 
- 

- Grading
    - o 21st century skills
    - o Self-direction
    - o Group work
- 
- 
- 

2. Review your notes from the discussion and list some ideas for making your unit run smoothly.
- 
- 

### Step 3: Creating a Management Resource

During this step, you create a management document to support implementation of your unit.



1. View sample management resources located in the *Management* folder on the Curriculum Resource CD. Take notes on any documents you might adapt for use in your classroom.
- 
- 

**1:1 Tip:** If you are attending a training with a one-to-one focus, review Managing Student Use of Computers in the *One-to-One* folder of the Curriculum Resource CD.

2. Create a management document for your portfolio.



3. Save the document in the *unit\_support* folder in your Portfolio folder.

Now you have an opportunity to look back on the materials you have created in this course for your Unit Portfolio. You have a variety of support materials and a completed student-centered unit that helps students develop 21st century skills and encourages self-direction. You are probably excited to try out the unit in your classroom and see how your students respond, but you still have two more opportunities to think about your unit and how you can improve it.

In this activity, you self-assess your Unit Portfolio. You then have an opportunity to revise your unit based on your notes in this module's Planning Ahead activity and during the beginning of Module 8.



**Note:** The following assessments are available in the *Assessments* folder of the Curriculum Resource CD or in Appendix A.

1. Review the Unit Plan Checklist to identify any missing or incomplete elements of your Unit Plan and make notes in the checklist of any areas you need to complete or modify.
2. Review the Unit Portfolio Checklist to ensure you have completed all pieces for your Unit Portfolio.
3. Review the Portfolio Rubric and highlight the descriptors that describe your portfolio.
4. Based on your self-assessment, note any changes you would like to make to your Unit Portfolio in the Unit Plan Checklist.

Other Comments:

[illegible]

# Planning Ahead

In this activity, you make some final revisions to your portfolio. You also think ahead to your own professional development and investigate Internet resources for educators.

## Activity 1: Revising My Unit Portfolio

Based on your self-assessment of your Unit Portfolio in the previous activity, make any necessary revisions. You will have more time to revise your Unit Portfolio in Module 8. In the Portfolio Showcase, you will have an opportunity to share your portfolio, receive feedback from colleagues, and provide feedback on the units created by your colleagues.

1. In preparation for your Portfolio Showcase in Module 8, check the Portfolio Checklist in the *Assessment* folder on the Curriculum Resource CD or on Appendix A.04 to make sure you have completed all components for your portfolio. You may also want to check the components of your portfolio for consistency.
2. Revise any of the components of your Unit Portfolio and make any necessary changes to your Unit Plan.

### Notes:

---

---

---

---

---

---

---

---

---

---

---

---

#### Activity 2: Reflecting on Professional Development

The Internet provides a wide variety of resources to help teachers improve their practices and further their professional development, as well as to locate resources for technology grants and educational software. During this activity, locate professional development opportunities that you may want to pursue and visit Web sites that offer grants and software for educators.

The International Society for Technology in Education (ISTE) standards state that teachers should use technology resources to engage in ongoing professional development and lifelong learning. Research on effective professional development indicates that it must be ongoing and systematic for any significant benefit (Kinnaman, 1990).

In a study examining what hinders or promotes successful integration of technology into the middle-school curriculum, Persky (1990) noted that using technology is not easy and that learning how to effectively use technology in the context of the classroom does not happen overnight. The need to allot time for continual learning is echoed in studies outside of education, which suggest that providing workers with high technology on the job ultimately fails if employees don't receive adequate training and continuing, on-the-job support. (Moursund, 1992)

Further, this need for continuing support means teacher training must be ongoing and not limited to "one-shot" sessions (Hawkins & MacMillan, 1993; Kinnaman, 1990; Shelton & Jones, 1996). Harvey and Purnell (1995) stated that teachers want sustained staff development rather than short-term training and development programs in technology. (cited in Brand, 1997)

The Intel® Teach Essentials Course is one such opportunity for you to enhance your technology-integration skills.

Many teachers are unable to integrate technology as effectively as they would like because they work in environments with inadequate access to computers and other technology resources. Fortunately, opportunities are available on the Web for schools to acquire technology through grants, academic pricing, and freeware.

## Facilitating with Technology



1. Review Thinking About My Future Development in the *About This Course* folder on the Curriculum Resource CD.
2. Take notes about any resources you want to explore in more detail in the future.

**Note:** If you do not have Internet access, use the following planning area to think about the kinds of professional development opportunities you would like to pursue.

---

---

---

---

---

---

---

---

**1:1 Tip:** To learn about professional development in a one-to-one computing environment, review the Professional Development section of the *One-to-One Computing* folder in the Curriculum Resources CD. To learn how educators have funded one-to-one computing programs, explore the Funding section.

## References

Brand, G. A. (1997, Winter). What research says: Training teachers for using technology. *Journal of Staff Development*, 19(1). Retrieved from [www.nsd.org/library/publications/jsd/brand191.cfm](http://www.nsd.org/library/publications/jsd/brand191.cfm)

International Society for Technology in Education. (2000). Educational technology standards and performance indicators for all teachers. *ISTE NETS Project*. Retrieved from [http://cnets.iste.org/teachers/t\\_stands.html](http://cnets.iste.org/teachers/t_stands.html)

Kinnaman, D. E. (1990). Staff development: How to build your winning team. *Technology and Learning*, 11(2), 24–30.

McKenzie, J. (March, 1998). The WIRED classroom. *From Now On: The Educational Technology Journal*, 7(6). Retrieved from <http://fno.org/mar98/flotilla2.html>

Nanjappa, A., & Grant, M. M. (2003). Constructing on constructivism: The role of technology. *Electronic Journal for the Integration of Technology in Education*, 2(1). Retrieved from <http://ejite.isu.edu/Volume2No1/nanjappa.htm>

Wiggins, G., & McTighe, J. (2005). *Understanding by design* (expanded 2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

## Module 7 Summary

Review the guiding questions and key points of Module 7 and think about the ideas and materials you have created that can be used in your classroom, instruction, or planning to help improve student learning.

### Module Questions:

- How can I facilitate a student-centered classroom?
- How can I use technology to support my instructional practice?

### Module 7 Key Points:

- Questioning is at the heart of good teaching. Good questions spark meaningful connections with what you bring to the classroom from prior classes and your own life experience.
- Teacher behaviors, classroom climate, and project implementation strategies are all important in the creation of a student-centered classroom.
- The details of an Implementation Plan identify the requirements needed outside of the classroom before, during, and after a unit to ensure its success.
- Ongoing professional development is important for sustaining growth.

In the following module, you will complete the unit-building process and showcase your work.

