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ABSTRACT

This research-based professional development course is designed by the North Central Regional Educational Laboratory to offer participants ways to connect technology with teaching and learning, and to examine ways to apply technology innovations to instruction and to improving teaching and learning. In the six, 2-hour sessions, participants (who should have previous experience using the Internet and other computer-related technologies) will work with their facilitators to: (1) explore the concept of engaged learning and the role technology plays in instruction; (2) use a planning framework to analyze and design technology-supported units and lessons that engage students;(3) build and collect a portfolio of lesson ideas; (4) reflect on current practice, refine existing lessons, and design new lessons and units; (5) analyze video, print, and online instructional examples; (6) examine instructional resources available on the Internet and the World Wide Web; (7) participate in collegial networks and a listserv; and (8) share ideas and provide collegial feedback. The "Facilitator's Guide" includes comprehensive notes on the course, professional development, and session-by-session expectations; optional tips to support facilitation; resources and references; and suggested syllabi and planning documents. The "Participant's Manual" contains materials to supplement each segment of the course and is aligned with the Facilitator's Guide. The first videotape, "Learning With Technology," provides an overview of the course. Five "Captured Wisdom" videotapes cover grade levels K-3 (1 videotape), 4-8 (3

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videotapes), and 9-12 (1 videotape). The last videotape "The Technology Corner" provides a glimpse into eight technology subjects that may be useful to teachers: modems, World Wide Web, scanners, browse basics, e-mail basics, CU-SeeMe, CD-ROMS, and the Internet. (Author/DLS)

LEARNING WITH TECHNOLOGY

Facilitator's Guide

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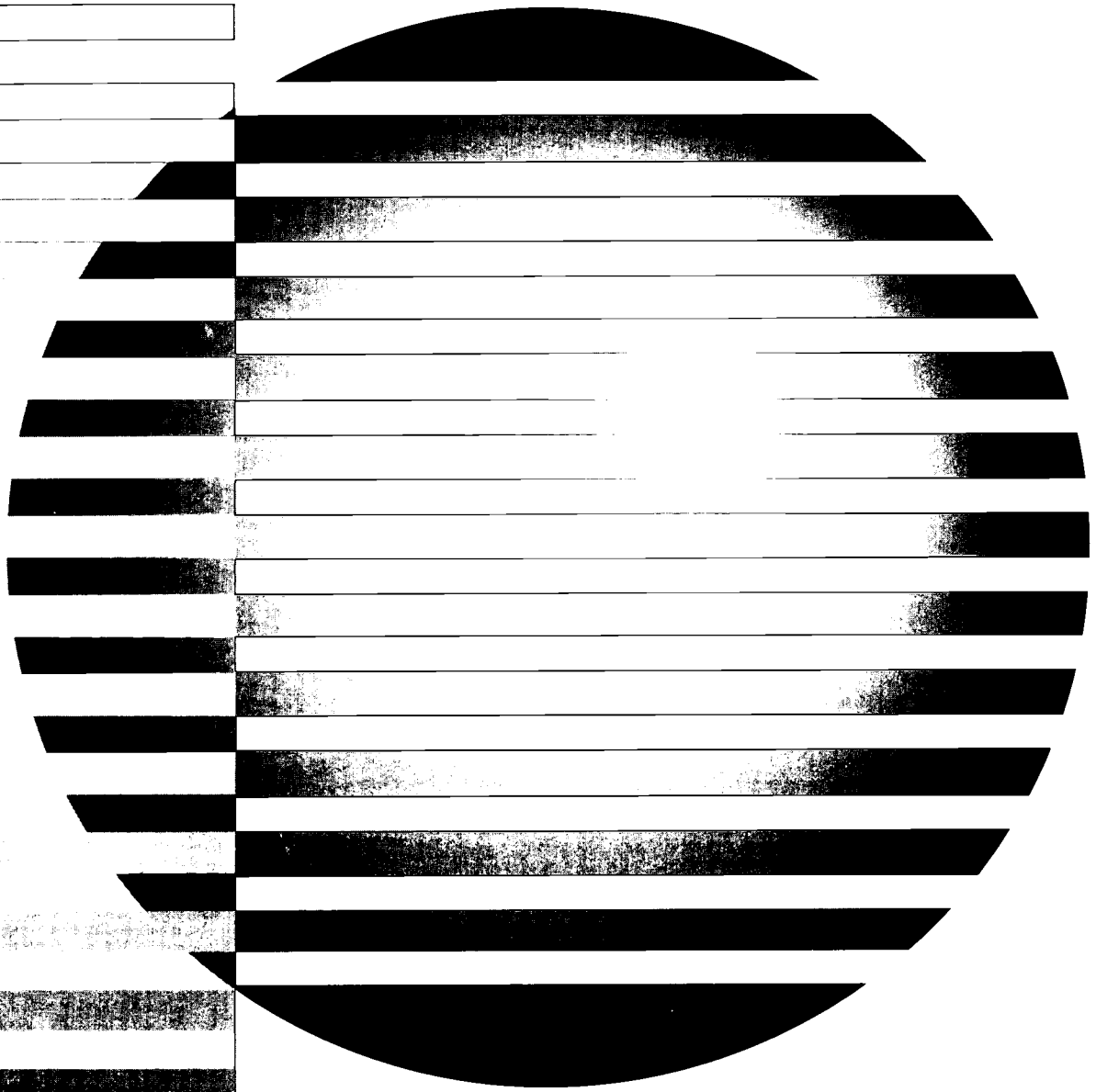
LEARNING WITH TECHNOLOGY



Facilitator's Guide

NCREL
North Central Regional Educational Laboratory

NCRTEC
North Central Regional Technology in Education Consortium

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Learning With Technology
Facilitator's Guide

Course Description: *Learning With Technology* is a research-based professional development course designed by the North Central Regional Educational Laboratory (NCREL). It offers participants ways to connect technology with teaching and learning. Some technology instruction for educators focuses on "how-to" procedures such as accessing the Internet, using desktop publishing, or operating scanners. This course examines ways to apply technology innovations to instruction and to improving teaching and learning. It is a first step in giving educators the expertise to realize the true promise of technology. *Learning With Technology* explores engaged learning and how it is enhanced by practical applications of technology.

In the six, 2-hour sessions of the *Learning With Technology* course, participants (who should have previous experience using the Internet and other computer-related technologies) will work with their facilitators to:

- Explore the concept of engaged learning and the role technology plays in instruction.
- Use a planning framework to analyze and design technology-supported units and lessons that engage students.
- Build and collect a portfolio of lesson ideas.
- Reflect on current practice; refine existing lessons; design new lessons and units.
- Analyze video, print, and online instructional examples.
- Examine instructional resources available on the Internet and the World Wide Web.
- Participate in collegial networks and a listserv.
- Share ideas and provide collegial feedback.

Facilitator's Academy: The Facilitator's Academy is a day-and-a-half academy designed to provide potential course facilitators with an overview of the *Learning With Technology* course, an intensive examination of the critical components and activities of the course, and opportunities to plan for implementing the course. Educators who are interested in becoming facilitators should have previous experience as trainers or staff developers; in facilitating professional development courses; and in using computer-related applications, such as the Internet, in their instructional practices.

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Introduction

The Facilitator's Guide (FG) describes the *Learning With Technology* course and provides the participants in the Facilitator's Academy with a template for planning and implementing the course. This template does not give facilitators a script they must follow; rather, it provides them with the knowledge and resources needed to customize the course.

This Guide has four types of information:

1. Comprehensive notes on the course, professional development, and session-by-session expectations
2. Optional tips to support facilitation
3. Resources and references
4. Suggested syllabi and planning documents for facilitators

The Facilitator's Materials section of the Guide provides several facilitation tips and tools. During discussions in the Facilitator's Academy, course facilitators can share other tips, tools, strategies, and stories from their experience.

During the Facilitator's Academy, there will time for participants to organize "constructive friend," or peer coaching, networks to help each other plan and implement their *Learning With Technology* courses. The Facilitators' Listserv (lwt-facilitators@ncrelsgi.ncrel.org) has been established for just that purpose.

Prior to offering the course, facilitators should familiarize themselves with the Guide and the following materials and resources:

- **Participant's Manual:** Participants in the course use this manual as a resource. (Note the alignment between the Participant's Manual and the Facilitator's Guide.)
- **Video Scenarios:** Twelve classroom video scenarios are available. An overview of each is provided on page 51 of the Participant's Manual. Overviews also appear on each video sleeve.
- **Online Resource Center:** The Online Resource Center is the course Web site where participants can find and share resource—including recommended Web sites and listserv—and lesson ideas with links to other sites. The Online Resource Center can be found at http://ncrelsgi.ncrel.org/ncrel/courses/lwt/. Enter "Course" (with a capital "C") as the user name and "learn" (all lower cases) as the password.

• **Course Listserv:** This discussion group is a cross-site forum for course participants to do joint planning, analysis, and problem solving. It also can serve as a source of support from a wide range of constructive friends who have taken the course. The course listserv can be found at lwt-group@ncrelsgi.ncrel.org.

• **Facilitators' Listserv:** The Facilitators' Listserv (lwt-facilitators@ncrelsgi.ncre.org) is an active listserv through which *Learning With Technology* course facilitators share ideas and examine resources. It is open only to facilitators.

• **Pre-Course Survey/Post-Course Survey:** Participants should complete the online Pre-Course Survey prior to beginning the course and the Post-Course Survey when they are done. These surveys can be found at the course Web site.

Pre-course planning tips:

The following tips are general suggestions for the facilitators who will be teaching the course. More specific tips and suggestions for each session are available in the Facilitator's Guide.

- Check the computers and Internet access prior to offering each session of the course.
- Work with a cofacilitator who can assist with technology questions and problems.
- Offer the course in two rooms: a computer laboratory and a seminar classroom.
- Take time to introduce everyone in the groups to each other.
- Try to set time aside for informal interactions to build the camaraderie of the learning community.

Course Overview

Course Goal

The goal of the course is to develop effective technology-supported instructional activities that promote engaged and worthwhile learning as well as enhance student achievement.

> We define engaged learning in the following way:
>
> Highly engaged learners take an active role in meaningful tasks and activities. They assume increasing responsibility for their own learning and demonstrate their understanding in many ways. They explore a variety of resources and strive for deep understanding through experiences that directly apply to their lives, promote curiosity and inquiry, and stimulate new interests.

The course focus on analyzing and designing instruction is quite different from that of technology courses that focus primarily on training in technical skills. Therefore, it is very important that participants enter with a clear understanding of what this course *is* and *is not.*

The course *is* for those who:

- Want to work with colleagues to develop, pilot, and debrief instructional activities and projects that use technology effectively.
- Have basic computer skills and know how to access the Internet.
- Have Internet access for their students.

All participants in the *Learning With Technology* course should have e-mail and Internet access.

The course *is not* for those who:

- Want basic training on the use of hardware, software, or the Internet.
- Want to evaluate or select software.
- Are interested in administrative applications.
- Want to use the Internet simply to get lesson idesa.

Please note that course examples draw from Grades 4-9. NCREL will add primary and secondary examples. When these examples are developed, they will be sent to all facilitators.

The facilitators use two basic strategies to achieve the course goals:

- Individual and group analysis of instructional examples
- Individual and group design of instructional lessons and units

Key to achieving the course goal will be:

- Focusing on instructional models that promote engaged and worthwhile learning.
- Distinguishing between more and less effective uses of technology.

Simply acquiring high-performance technology tools will not ensure more engaged learning or greater student achievement. However, when used in conjunction with a sound instructional model, technology enhances and extends instruction in ways that are not possible without it. Therefore, we begin the course by exploring the concept of engaged learning. Three questions will be central to all course activities:

1. In what ways does this lesson promote worthwhile and meaningful learning?
2. In what ways does this lesson promote engaged learning?
3. How does the technology enhance and extend the lesson in ways that would not be possible without it?

We have provided a variety of print and electronic resources to help course participants address these questions, including a Planning Framework.

Planning Framework

This tool will play a key role in designing lessons and units.

Unit Analysis Worksheet

This tool will play a key role in course activities as we analyze and refine instructional activities.

Participants will use the worksheet with:

- Video Scenarios
- Print Scenarios (fictionalized composites of instructional practice)
- Sample Lessons
- Their own existing lessons

Examples of Effective Uses of Technology

We have included three sets of examples of instructional activities that make effective use of technology:

- Sample Lessons
- Video Scenarios
- Online Resource Center (includes hot links to other Web sites)

We encourage participants to focus on these examples as a starting point and not spend a lot of time looking for lesson ideas on the World Wide Web. Many people become so focused on looking for lessons on the Web that they fail to consider the ways it can serve as a direct resource to students. Additionally, many lesson examples on the Web do not promote engaged and meaningful learning.

Class Size

We recommend a maximum class size of 15.

After the Course Ends

Participants should complete the Post-Course Survey on the course Web site.

Technical Support

It will be ***essential*** for your system administrator to be available for troubleshooting ***prior to*** and ***during*** each course session in which you will be using the Internet to access and explore sites on the World Wide Web.

Pre-Session Assignments

Pre-session assignments are provided for each week of the course. These activities will help participants prepare for, reflect upon, implement, and supplement ideas and activities from the course sessions. Participants will be asked to make a commitment of time and effort that goes beyond that of traditional inservice activities or workshops. Therefore, we expect that most sites will be offering the course for graduate or other professional credit.

Course Activities and Customization

We have outlined activities for each session, including time estimates. Of course, the actual time will vary depending on the size of your group and participants' prior knowledge and experience.

Although each session includes key concepts that cannot be changed, you may wish to adapt the assignments and activities in order to respond to your particular group. You will probably want to incorporate your state's academic standards (e.g., the Minnesota Graduation Standards or the Illinois Academic Standards). In the Planning Framework (Participant's Manual, p. 15), individuals are asked to consider what school, district, or state goals, benchmarks, or outcomes they address in the instructional plan.

We also recognize that some facilitators appreciate a step-by step-guide, while others want the opportunity to incorporate their own personality and creativity. There are many ways that you can structure opportunities for reflection, discussions, and group sharing, but we ask that the basic design of the activities remain the same. You can:

- Engage participants in their own learning (don't dispense information).
- Honor the wisdom of participants (don't expect to be the sole expert and voice).
- Focus on application (don't limit yourself to theory).
- Distinguish between effective and less effective uses of technology (don't use technology just for the sake of technology).

Supplementing the Session Notes

If you have the time and opportunity, we would encourage you to use activities that have not been included as assignments or in the course curriculum. For example:

- **Coaching.** Whenever possible, we would encourage classroom visits, coaching, or peer mentoring. See Resources for Facilitators in the Facilitator's Materials section.
- **Journals.** You may wish to have participants keep individual or dialogue journals. A sample journal template has been included in Appendix II.
- **Video Scenarios.** You may want to set aside times outside of class for the participants to view or review selected videos. Alternatively, you could establish a lending library so that they can take them home for the week. During later stages of the course and after its completion, participants may be willing to videotape and share their own lessons with colleagues through a video club.

- **Optional Computer Lab Time.** We strongly recommend that you provide computer lab time beyond the course sessions so that participants can practice their technical skills and explore Internet resources at their leisure. There should be someone in the lab who can provide technical support. It may be most convenient for the participants if these sessions are just before and just after course sessions, but, of course, you and your group may prefer another time.

Session Length

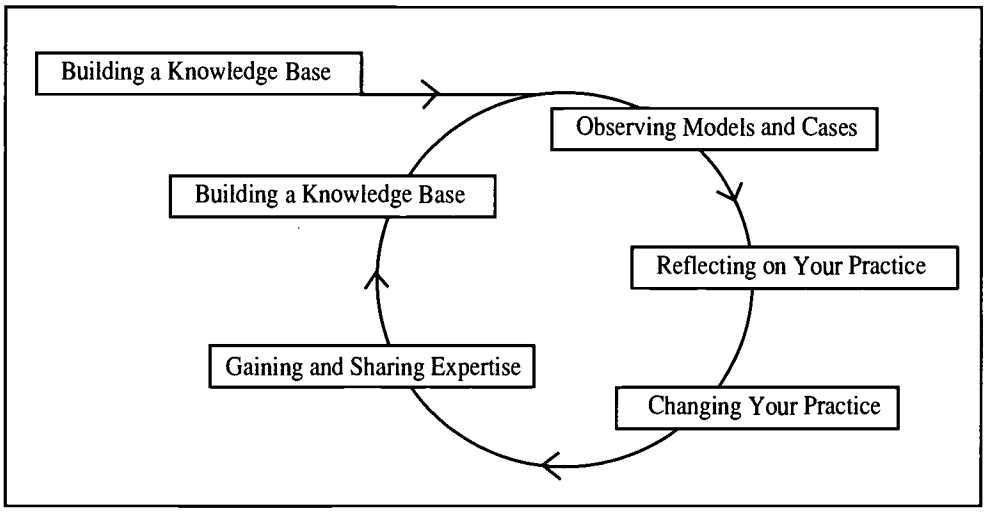
We have designed the course for six, 2-hour sessions. However, if you can have longer sessions, there will be more time for individual and group reflection, discussion, and planning. You can also provide additional in-class opportunities for online computer exploration.

The course should *not* be compressed into a two-day workshop format. It is important for the participants to have sufficient opportunities to reflect on practice, explore new resources, and pilot lesson ideas between sessions. Compressing the sessions would likely result in information overload and frustration.

Professional Development and the Role of the Course Facilitator

The NCREL Professional Development Model

The course uses a professional development model developed by the North Central Regional Educational Laboratory for its *Strategic Teaching and Reading Project.* The model is based on research on adult learning and professional development. Professional growth is conceptualized as five dimensions that are developmental, overlapping, and cyclical.



Building a Knowledge Base

Acquire new knowledge, information, and skills.

Observing Models and Cases

Study instructional examples in order to develop a practical understanding of the research.

Reflecting on Your Practice

Analyze your instructional practice on the basis of new knowledge.

Changing Your Practice

Turn your theoretical and practical knowledge into plans for instructional change. Try out the plans and revise them if necessary.

Gaining and Sharing Expertise

Refine your instructional practice while sharing your practical wisdom with colleagues.

The Course Facilitator

The course facilitators still need expertise even as they move away from an expert-driven model. In this course, the facilitator should be someone with curriculum and professional development expertise as well as a good understanding and comfort with technology, particularly the World Wide Web.

As our understanding of effective professional development has grown, there has been a shift from an expert-driven delivery model to one where teachers come together to study, learn, and develop new instructional practices. And just as the role of classroom teachers shifts as they move to new and more engaging forms of instruction, so, too, does the role of those responsible for professional development. We are no longer presenters but rather facilitators, guides, and co-learners.[1]

In an expert-driven model we focused on:

- Providing information.
- Suggesting answers and solutions.
- Using effective presentation and motivational techniques.
- Preparing creative handouts and overheads.

In a model where teachers come together to study, we are concerned about:

- Structuring an environment that encourages collaboration.
- Creating opportunities for professionals to find their own answers and solutions.
- Using group processes that facilitate reflection and sharing.
- Providing resources that support research and study.

The growth of teacher study groups, action research, case discussions, and curriculum development exemplify this new model. We believe in the value of teachers' practical wisdom and have designed this course to promote opportunities for colleagues to learn with and from one another.

[1] A more comprehensive discussion is provided in Killion and Simmons's article, "Zen of Facilitation" (see Resources for Facilitators in Facilitator's Materials section).

Cross-Site Collaboration

We have designed *Learning With Technology* primarily as a face-to-face course that will be offered at multiple sites throughout the year. Course participants will have the opportunity to learn from and work with colleagues at other course sites through the following online activities:

- Online Resource Center (course Web site)
- Course listserv
- Listserv of their choice

Participants are asked to participate in two different listservs so that:

1. Those new to listservs can practice in the course listserv, which is designed to be a safe environment that is password protected.
2. They can begin to build an online learning community with others with similar professional goals.

Participants will be encouraged to use the Online Resource Center and course listserv *during and after* the course. We hope that they will regularly contribute lesson ideas, management tips, and other resources and that they will come to view the Online Resource Center as a virtual professional development center.

The Online Resource Center can be found at:

http://ncrelsgi.ncrel.org/ncrel/courses/lwt/

The course listserve can be found at:

lwt-group@ncrelsgi.ncrel.org

Session Overview

Session 1

Discuss course and goals

Explore the concept of engaged learning

Learn about the World Wide Web (WWW) as an instructional resource

Session 2

Use the World Wide Web as a learning activity

Sign up for the listserv

Session 3

Analyze video examples of instruction

Compare two video examples

Introduce concept of Constructive Friends (peer coaching)

Session 4

Analyze Print Scenarios

Revisit Constructive Friends (peer coaching)

Begin to design and refine an instructional activity using the Planning Framework and tools.

Session 5

Analyze sample lessons

Revisit Constructive Friends (peer coaching)

Continue to design (or refine) an instructional activity using the Planning Framework

Session 6

Share lesson designs

Adapt lesson ideas to other grade levels and content areas

Create a portfolio of lesson ideas

Reexamine individual and collective goals and discuss strategies for continued collaboration and learning

Celebrate success

Facilitator's Notes

Session 1

1. In what ways does this lesson promote worthwhile and meaningful learning?
2. In what ways does this lesson promote engaged learning?
3. How does the technology enhance and extend the lesson in ways that would not be possible without it?

Objectives:

- Complete the Pre-Course Survey and participant information.
- Discuss the course goals.
- Review the concept of engaged learning.
- Examine the rationale for starting the course with engaged learning.
- Explore the World Wide Web (WWW) as an instructional resource.

Material:

Equipment and Expendables

- Computers with access to the World Wide Web (at least one for every two participants)
- Projection panel (LCD or video projection unit)
- Overhead projector
- Blank transparencies
- Chart paper and markers
- Post-it™ Notes

Resources and Worksheets

- Participant's Manual
- Engaged Learning Activity (FG, p. 81)
- Engaged Learning essay (PM, p. 5)

- Participant Registration and Pre-Course Survey forms (available at Online Resource Center)
- Web Site Handout (FG, p. 83)
- Making a Move handout (FG, p. 85)
- Journal Template (FG, p. 77)
- Planning Framework (PM, p. 15)

Group Process Techniques

- Questions With Post-it™ Notes (FG, p. 53)
- Concept Walk (FG, p. 50)

Personnel

- Cofacilitator with technological expertise

Optional

Technology Checklist, The Advantages and Disadvantages of Different Technologies, and New or Extended Technologies (PM, pp. 108-117)

Activities:

1. **Participant Introductions and Expectations.** Start this session in the classroom. Post chart paper and distribute Post-it Notes. Tell participants to write any questions they have during the session on the Post-its and put them on the chart paper. Using the Think-Pair-Share technique, ask participants, What are your expectations for *Learning With Technology?* As they describe their expectations, have the participants introduce themselves and say a few words about their jobs. You (or the cofacilitator) should list the participants' expectations on chart paper as well as note their job responsibilities and/or grade levels. During this discussion, ask the participants to describe their experiences with technology and integrating technology into their instructional practice. At this point in the course, you will know if the participants need more training in technology or facilitation skills. Two possible options are available: (1) work with an assistant or cofacilitator who can give individual skill training or (2) organize a tutorial to take place before and after the following sessions. (15 minutes)
2. **Overview of the Course.** Distribute the Participant's Manual. Using a Power Point presentation or transparencies, display the goals of the course and a session-by-session synopses. Discuss how the course goals align with the participants' personal goals. Use a Concept Walk to preview the manual. End the overview by stressing the three guiding questions and explaining that they will be the focus of each session. (15 minutes)

3. **Engaged Learning Activity.** Ask participants to read the Engaged Learning essay and to complete the Engaged Learning Activity. Discuss the engaged learning characteristics with the participants. Ask them to reflect on the relationships between the characteristics of engaged learning generated by the participants and those cited in the essay. Discuss the part of the Think-Pair-Share procedure above where the participants were asked to recall their personal experiences before being introduced to the course material. Ask the question, Why are we starting the *Learning With Technology* course by discussing the characteristics of engaged learning? (20 minutes)

4. **Introduction of the Planning Tool.** Refer participants to the Planning Tools section of the Participant's Manual (pp. 83-87). Explain that during the next session, participants will use the charts—Learning Actions-Engaged Learning and Engaged Learning Tasks—while working with lessons. (5 minutes)

5. **Exploration of Web Sites.** Move to the technology lab. Invite the participants to access the NCREL Online Resource Center. (Again, this might be a time when you will find that some of the participants need extra technology training. For suggestions, see #1 above). At this time, the participants will complete an online registration and Pre-Course Survey (or a handout copy if there is a technology problem). The participants should explore all of the information available at the Online Resource Center. Also ask them to enroll in the LWT listserv. The enrollment form can be accessed from the Online Resource Center. Encourage participants to look at the information in the Participant's Manual, including Management Tips (pp. 55), Step-by-Step Guide to Finding and Using Internet Web Sites (pp. 61), and Step-by-Step Guide to the *Pathways to School Improvement* Internet Server (pp. 69).

   Distribute the Web Site Handout. Participants should use the remaining time to explore the Web and identify interesting sites. As a closure for the activity, ask the participants to share good Web sites with the each other. They can identify the sites they found using the Web Site Handout and write the addresses on a flip chart. Participants also can share Web exploration tips such as bookmarking, opening locations, using quotations, and so on. (15 minutes)

6. **Targeted Web Site Exploration.** Ask the participants to work in pairs to identify the topic of a unit activity they are developing for their classrooms (e.g., astronomy, ground water study, weather). Explore some Web sites that they could use with those units. (If the participants do not have specific topics to explore, have them do the Making a Move activity. If they need help finding appropriate Web sites, use the Web Site Handout.) The goal of this activity is for the participants to find resources that support the teaching of specific units and improve student interactivity. At the close of the activity, ask the participants to answer the following questions: How could the Web site(s)

make an instructional activity even more engaging? What other resources, print or electronic, would the participants use with the Web site(s)? Invite the participants to write their unit titles and Web sites on chart paper for posting. (30 minutes)

7. **Reflection and Sharing.** The participants can use the Journal Template for reflection. Discuss any questions that the participants posted on the chart paper or wrote on the Post-Its. Invite them to share information about which Web sites were their favorites. Ask them how they might use the Web sites that they explored as part of a lesson that engages students. Ask them if there are some additional resources for engaging students that they would recommend. (10 minutes)

8. **Assignments for the Next Session**

   - Reread the Engaged Learning essay.
   - Use the Step-by-Step Guide to Finding and Participating in Listservs (PM, p. 75) and access the Online Resource Center and make an entry in the course listserv, describing the interesting Web sites that you found and how you might use them.
   - Explore more Web sites to share.
   - Reflect on and review the course goals, and jot down your own personal goals for the course.
   - Be prepared to share your goals during the next session.
   - Bring lessons you teach or plan to teach.

   (5 minutes)

Option:

Some facilitators found it helpful during the session to use the Technology Checklist, The Advantages and Disadvantages of Different Technologies, and New or Extended Technologies as springboards for discussion.

Notes

Notes

Session 2

1. In what ways does this lesson promote worthwhile and meaningful learning?
2. In what ways does this lesson promote engaged learning?
3. How does the technology enhance and extend the lesson in ways that would not be possible without it?

Objective:

Explore the World Wide Web as an instructional resource in an activity that engages students.

Pre-Class Assignments:

- Reread the Engaged Learning essay.
- Using the Step-by-Step Guide to Finding and Participating in Listservs, access the On-line Resource Center, and make an entry in the course directory.
- Reflect on and review the course goals and jot down your own personal goals for the course.
- Be prepared to share your goals during the next session.
- Explore Web sites to share.
- Bring lessons you teach or plan to teach.

Material:

Equipment and Setup

- Computers with access to the World Wide Web (at least one for every two people)
- Post-it™ Notes
- Optional: Software that will enhance this activity (add some suggestions from the other facilitators or from participants)

Resources and Worksheets

- Engaged Learning essay (PM, p. 5)
- Learning Actions-Engaged Learning and Engaged Learning Tasks charts (PM, pp. 85-87)
- Making a Move handout (FG, p. 85)

- Unit Analysis Worksheet (FG, p. 89)
- Journal Template (FG, p. 77)

Group Process Techniques

- Questions With Post-it™ Notes (FG, p. 53)
- Action Lists (FG, p.49)
- Gallery Walk (FG, p. 51)
- Fast-Write (FG, p. 50)

Activities:

1. **Assignments Debriefing.** In the seminar room, debrief assignments. Discuss the Engaged Learning essay. Ask the participants to reflect on the alignment of their own goals with the course goals. Ask them to identify additional information that should be included in the course to address their goals. Have participants share any new Web sites they explored. Remind them to continue to write their questions on Post-it Notes and put them on the chart paper. (10 minutes)
2. **Technology to Enhance Engaged Learning.** Refer the participants to the Learning Actions-Engaged Learning and Engaged Learning Task charts as a set of concrete examples showing engaged learning. Invite the participants, working in pairs, to generate Action Lists for using technology to enhance engaged learning. At the close of this activity, share the participants' lists and use them as the basis for the Web search in the next activity. (20 minutes)
3. **Web Site Exploration.** Move to the computer laboratory. In groups of two, using the participants' action lists, explore the Web to find sites participants can use to enhance the lessons they brought to this session. (Adapt the Making a Move handout for use with students if the participants do not have their own lessons.) Debrief by asking the participants to share their findings and to relate ways in which the information they found had the potential to engage students. Also, ask them to answer the three overarching questions of the course as they pertain to their lessons and to the Web site enhancements they designed. (20 minutes)
4. **Lesson Analysis.** Distribute a Unit Analysis Worksheet to the pairs of participants working at the computers. Invite them to revisit their lessons and the Web sites and use the information to complete this worksheet. (10 minutes)
5. **Signing on to Listservs.** Before leaving the computer lab, make sure that everyone has enrolled in the course listserv and at least one other listserv. (10 minutes)

6. **Analysis Sharing.** Return to the classroom, reorganizing the participants into groups of four. Ask each group to share the information on the Unit Analysis Worksheets. Invite them to put their information on chart paper to share with the whole group. Participants should list how they will use technology to help students build knowledge and skills; learn independently and with others; demonstrate knowledge, ability, and creativity; and manage their own learning. Post the groups' charts and share through a Gallery Walk. (20 minutes)

7. **Session Debriefing.** The participants can use the Journal Template as they did in the first session. Use a Fast-Write technique to generate additional questions about using technology to promote engaged learning. (15 minutes)

8. **Assignments for the Next Sessions**

   - Post a question on the listserv.
   - Revisit the Online Resource Center, *Pathways to School Improvement,* and the Step-by-Step Guide to Finding and Participating in Listservs. Subscribe to a new listserv and be able to recommend one to the participants in the next session.
   - Bring lessons.
   - Read Designing and Refining Lessons with Colleagues: Tips for Productive Work (PM, p. 59).
   - Add to the Learning Actions-Engaged Learning and Engaged Learning Tasks charts.

   (5 minutes)

Option:

Open the computer laboratory for additional individual exploration before or after the class.

Notes

Session 3

1. In what ways does this lesson promote worthwhile and meaningful learning?
2. In what ways does this lesson promote engaged learning?
3. How does the technology enhance and extend the lesson in ways that would not be possible without it?

Objectives:

- Analyze video examples of instruction using the Unit Analysis Worksheet.
- Review the concept of constructive friends.

Pre-Class Assignments:

- Post a question on the listserv.
- Revisit the Online Resource Center, Pathways to School Improvement, and the Step-by-Step Guide to Finding and Participating in Listservs. Subscribe to a new listserv and be able to recommend one to the participants in the next session.
- Bring lessons.
- Read Designing and Refining Lessons with Colleagues: Tips for Productive Work (PM, p. 59)
- Add to the Learning Actions-Engaged Learning and Engaged Learning Tasks charts.

(5 minutes)

Material:

Equipment and Setup

- Recommended videotapes: "Historical Fiction" and "Are We There Yet?"
- VCR and monitor
- Computer laboratory with Internet access
- Chart paper, markers, masking tape, and Post-it™ Notes

Resources and Worksheets

- Constructive Friends Feedback Form (FG, p. 75)

- Individuals and the Change Process (FG, p. 43)
- Unit Analysis Worksheet (FG, p. 89)
- Building a Collegial Culture (FG, p. 45)
- Journal Template (FG, p. 77)

Group Process Techniques

- K-W-L (FG, p. 52)
- Museum Tour (FG, p. 53)
- Three-Two-One (FG, p. 54)

Activities:

1. **Assignments Debriefing.** Begin the session in the computer lab, debriefing the homework. Invite the participants to share some good Web sites they found as part of their assignments. Post their Web sites on a piece of chart paper. Answer any questions regarding the information from their assignments and the previous session. (15 minutes)
2. **Video Analysis.** Move to the classroom to view the videotapes "Historical Fiction" and "Are We There Yet?"* Review the Individuals and the Change Process and Building a Collegial Culture handouts. Prior to viewing the videotapes, do a K-W-L, working in groups of four to six. Ask the participants to identify what they expect to see if a teacher is using the Internet as an integral part of a unit on historical fiction and what they would want to learn from the videotape. View the "Historical Fiction"* videotape. Debrief the videotape using the Unit Analysis Worksheet. Ask the participants to identify what they learned. Also, briefly introduce the constructive friends concept. Then, ask participants to act as constructive friends of the teacher in the video and comment on the lesson. (30 minutes)
3. **Additional Video Analysis.** In preparing to view "Are We There Yet?,"* invite the participants, within their existing groups, to view the videotape to (1) identify the content area and (2) use the Constructive Friends Feedback Form to analyze the lesson. Debrief the activity, by asking the participants to offer feedback as if they were a constructive friend of the teacher. (30 minutes)
4. **Application and Discussion.** Regroup the participants into grade level or content area groups (e.g., lower elementary teachers, fifth-grade teachers, mathematics teachers) of four to six participants. Ask them to identify ideas from the videotapes that they can apply in their classrooms. You might want to use the Museum Tour group process tech-

nique to generate and share ideas. The participants could use the lessons that they brought to the session as stimuli for their discussions. (30 minutes)

5. **Session Debriefing.** Use the Journal Template or a strategy from the group process techniques to encourage the participants to reflect upon this session and to generate questions from that area of their work. One technique that generates questions is Three-Two-One. Ask them to share their ideas with the larger group. (10 minutes)

6. **Assignments for the Next Session.**

   - Read two Print Scenarios: The Debate Goes On (PM, p. 25) and Research and Presentations (PM, p. 33).
   - Review Sample Lessons (PM, p. 37). (Explain to participants that the versions in the Online Resource Center include links to other resources.)
   - Explore one new Web site to use to engage students in their learning.
   - Post a question on the listserv.
   - Bring in a lesson from Session 2.

   (5 minutes)

Options:

- View other videotapes depending on the interests of the participants.
- Organize extra viewing sessions.
- Open the computer laboratory for independent work before and after the session.
- Use the Venn diagram to compare and contrast the videotapes.

* Facilitators may select any video scenario for the video analysis.

Notes

Session 4

1. In what ways does this lesson promote worthwhile and meaningful learning?
2. In what ways does this lesson promote engaged learning?
3. How does the technology enhance and extend the lesson in ways that would not be possible without it?

Objectives:

- Analyze Print Scenarios.
- Refine a lesson.
- Practice lessons.
- Design a lesson or unit for the final project.
- Explore further the concept of constructive friends and peer coaches.

Pre-Class Assignments:

- Read two Print Scenarios: The Debate Goes On (PM, p. 25) and Research and Presentations (PM, p. 33).
- Review Sample Lessons (PM, p. 37). (Explain to participants that the versions in the Online Resource Center include links to other resources.)
- Explore one new Web site to use to engage students in their learning.
- Post a question on the listserv.
- Bring in a lesson from Session 2.

Material:

Equipment and Setup

- Chart paper, markers, tape
- Access to the computer laboratory

Resources and Worksheets

- Venn diagram (FG, p. 87)
- Unit Analysis Worksheet (FG, p. 89)

- Constructive Friends Feedback Form (FG, p. 75)
- Planning Framework (FG, p. 91-95)
- Planning Tools: Learning Actions, Learning Actions-Engaged Learning, Engaged Learning Tasks, Examples of Technology Use, Technology Checklist, and The Advantages and Disadvantages of Different Technologies (PM, pp. 83-117)
- Journal Template (FG, p. 77)
- National, state, and/or local standards, benchmarks, and objectives as well as teaching or assessment guidelines if available

Group Process Techniques

- Fast-Write (FG, p. 50)
- TILT (Things I Learned Today) (FG, p. 55)

Activities:

1. **Assignments Debriefing.** In the classroom, open the session by asking the group if they tried to implement any of the ideas from the last session, if they have questions about the last sessions, and if they want to share any new Web sites. (10 minutes or adjust the time if the participants want more opportunities to discuss the issues)
2. **Print Scenario Analysis.** Analyze two Print Scenarios: The Debate Goes On and Research and Presentations by dividing the participants into small groups (options include pairs or trios) and inviting the groups to compare the two scenarios by looking at "high" and "low" applications of technology and engaged learning. Debrief the groups by having them share their findings using Venn diagrams, chart paper presentation, or oral reports. (30 minutes)
3. **Constructive Friends.** Invite the participants to take the role of constructive friends and describe how they would interact with the teachers in the two scenarios. What questions would they ask the teachers? How would the participants coach these teachers to improve the lessons described in the scenarios? (Use the Constructive Friends Feedback Form to structure the discussion.) Write suggestions on chart paper and post on the wall in the seminar room. Anything written on chart paper should be copied and distributed for the participants' later reference. (15 minutes)
4. Adding Technology. Invite the participants to jot down the engaged learning actions in The Debate Goes On on the Unit Analysis Worksheet. Ask the participants to consider the types of technology resources that could enhance and extend this activity, and direct them to use Examples of Technology Use (PM, p. 89) as a guide. Debrief by asking the

participants how they would change the lesson and how the *Learning With Technology* documents influenced their thinking about engaged learning and technology. (30 minutes)

5. **Lesson Planning.** Begin lesson planning by introducing the Planning Framework and showing where it includes considerations for local and state standards, goals, objectives, and so on, or issues such as authentic assessment. Ask the participants to use the lessons that they brought to Sessions 2 and 3. The participants can work on their lessons in groups and in the computer laboratory. (If the participants do not have lessons, brainstorm ideas for lessons.) Working in groups, the participants should go through the questions in the long form of the Planning Framework to guide their planning. (The questions in the Planning Framework should cause the participants to focus on goals, objectives, habits of mind, assessment, and so on, related to the lesson. During this session, you can point out state and local initiatives as the participants examine answers to those questions.)

   Suggest that participants use the Planning Tools, including Learning Actions, Learning Actions-Engaged Learning, Engaged Learning Tasks, Examples of Technology Use, Technology Checklist, and The Advantages and Disadvantages of Different Technologies. Leave this activity open and encourage the participants to try out their ideas before the next session and bring their notes back to Section 5. (20 minutes)

6. **Constructive Friends Review.** Reorganize the participants into pairs and direct the pairs to act as constructive friends or peer coaches to review their progress on their lessons. (5 minutes or adjust the time allotments if necessary)

7. **Session Debriefing.** Reconvene the participants and ask them to reflect on this session using the Journal Template. Other options are the Fast-Write activity and TILT (Things I Learned Today). After the participants finish writing, invite them to discuss what they wrote. (10 minutes)

8. **Assignments for the Next Session.**

   - Review the Sample Lessons (PM, p. 37).
   - Access the links on the Online Resource Center.
   - Select a focus for the design of a new or refined instructional activity to share at the next session.
   - Explore *Pathways to School Improvement* and other Web sites.
   - Read recent posting on the listserv to which you subscribed.
   - Contact a constructive friend to review your lesson.

- Post one question, comment, or response to the *Learning With Technology* Web site.
- Try out components of the lessons being designed in the course with students.

Options:

- Read the other print scenarios depending on the interest of the participants.
- Create a matrix comparing the levels of engagement and technology in all of the print scenarios.

Notes

Notes

Session 5

1. In what ways does this lesson promote worthwhile and meaningful learning?
2. In what ways does this lesson promote engaged learning?
3. How does the technology enhance and extend the lesson in ways that would not be possible without it?

Objectives:

- Analyze Sample Lesson.
- Continue to design and refine an instructional activity using the Planning Framework and tools.
- Connect the Planning Framework to state and local initiatives, including standards, benchmarks, objectives, etc.
- Discuss the activity with a constructive friend.
- Share lessons developed in the course.

Pre-Class Assignments:

- Review the Sample Lessons (PM, p. 37).
- Access the links on the Online Resource Center.
- Select a focus for the design of a new or refined instructional activity to share at the next session.
- Explore *Pathways to School Improvement* and other Web sites to find at least one useful idea or resource.
- Read recent posting on the listserv to which you subscribed.
- Contact a constructive friend to review your lesson.
- Post one question, comment, or response to the *Learning With Technology* Web site.
- Try out components of the lessons being designed in the course with students.

Material:

Equipment and Setup

- Chart paper, markers, tape
- Access to the computer laboratory

Resources and Worksheets

- Learning Actions-Engaged Learning and Engaged Learning Tasks charts (PM, pp. 85-87)
- Planning Framework—long form (FG, p. 93)
- National, state, or local standards, benchmarks, objectives, etc.
- Planning Tools (PM, p. 83-117)
- Journal Template

Activities:

1. **Assignments Debriefing:** Ask the group if they tried to implement any of the ideas from the last sessions, if they have questions about the last session, and if they want to share any new Web sites. (10 minutes)
2. **Sample Lessons Analysis.** Chose a sample lesson for participants to analyze. Invite them to jot down examples of engaged learning in the Learning Actions-Engaged Learning and Engaged Learning Tasks forms and answer the three guiding questions above. As constructive friends, the participants can discuss how they would coach a hypothetical colleague, who wrote this lesson, to improve it. Bring closure to the activity by asking the participants to identify how they can apply ideas from this lesson to their own teaching. (20 minutes)
3. **Lesson Planning.** Continue to work on designing lessons, either individually or in groups, with or without the computers. Remind the participants to use their state and local standards and benchmarks to supplement the Planning Framework and Planning Tools. The participants should have some experience using the long form of the Planning Framework. It stimulates important considerations. After they become comfortable with using this form, they may want to switch to the short form. (40 minutes)
4. **Constructive Friends Review.** Regroup to share and discuss the lessons with constructive friends. These constructive friends will bring closure to this activity by sharing an activity, assessment, Web site, and so on, with the larger group. (20 minutes)

5. **Application.** Invite the participants to identify at least one idea that they are going to implement into their teaching next week. Give the participants two minutes to write their ideas down before they speak to the group. (20 minutes)

6. **Session Debriefing.** Invite the participants to reflect upon this session. The participants can use the Journal Template for their writing before the discussion. Ask them to identify questions that they need the group to answer. Have them share the progress they are making on their lessons. Invite participants to share any aspects of the lessons they implemented with their classes. (20 minutes)

7. **Assignments for the Next Session.**

   - Prepare to share your lesson by making copies of completed Planning Framework for all of the class members.
   - Identify the parts of this activity that you think are the best examples of engaged and meaningful learning and the best examples of effective use of technology, using the three guiding questions.
   - Identify any design, resource, or management issues for the constructive friends discussion.
   - Share the lessons with colleagues who are not enrolled in the class and note their comments.
   - Work with a constructive friend to plan ways to sustain your relationship and support each other.
   - Reflect and jot down lessons learned from the course.
   - Locate at least one online resource—explore Web sites and listservs to locate a good idea, resource, or example.

Optional Activities:

- Examine Web sites for the sample lessons.
- Open the computer laboratory for before- and after-sessions.
- Identify other materials, resources, and computer-related technologies for the participants' lessons.
- Develop assessment for the lessons.

Notes

Session 6

1. In what ways does this lesson promote worthwhile and meaningful learning?
2. In what ways does this lesson promote engaged learning?
3. How does the technology enhance and extend the lesson in ways that would not be possible without it?

Objectives:

- Share lesson designs.
- Share implementation stories.
- Discuss how to adapt lesson ideas to other grade levels and content areas.
- Create a portfolio of lesson ideas.
- Reexamine individual and collective goals and discuss strategies for continued collaboration and learning.
- Complete the Post-Course Survey.
- Celebrate successes!

Pre-Class Assignments:

- Prepare to share your lesson by making copies of completed Planning Framework for all of the class members.
- Identify the parts of this activity that you think are the best examples of engaged and meaningful learning and the best examples of effective use of technology, using the three guiding questions.
- Identify any design, resource, or management issues for the constructive friends discussion.
- Share the lessons with colleagues who are not enrolled in the class and note their comments.
- Work with a constructive friend to plan ways to sustain your relationship and support each other.
- Reflect and jot down lessons learned from the course.
- Locate at least one online resource—explore Web sites and listservs to locate a good idea, resource, or example.

Material:

Equipment and Setup

- Chart paper, markers, and tape
- Overhead projector transparencies
- Access to the computer laboratory

Resources and Worksheets

- Multiple copies of individual lessons

Group Process Techniques

- Museum Tour (FG, p. 53)
- Action Lists (FG, p. 49)
- Brainstorming (FG, p. 49)
- Forced-Choice Stickers (FG, p. 51)
- Think-Pair-Share (FG, p. 54)
- Gallery Walk (FG, p. 51)

Optional

- Computer with presentation software and projection panel or projector
- Pizza or other refreshments

Activities:

1. **Assignments Debriefing.** Invite the participants to discuss experiences since the last session regarding implementing what they learned from the class, sharing their lessons with colleagues, and working with a constructive friend. Bring closure to this activity by asking the participants whether they are trying engaged learning in other instructional activities than the ones being developed for the course. (15 minutes)
2. **Group Sharing.** Ask the participants to share lessons and describe their implementation experiences with their students in small groups of three to four people. Follow this with a Museum Tour for whole group sharing. This activity can consist of sharing lessons learned, posing problems, questioning, and examining dilemmas. Encourage participants to take notes and make suggestions as they did on the Constructive Friends Feedback Form. Bring closure to the activity by asking the participants to identify implementation and content themes that they observed in the lessons and to identify adaptations for other content areas and grade levels. (55 minutes)

3. **Look Back and Ahead.** Using one or more of the Group Process Techniques (e.g., Action Lists, Brainstorming, Forced-Choice Stickers, Museum Tour, or Think-Pair-Share), invite the participants to consider the questions, What progress have they made in achieving their individual goals? What are their greatest needs and priorities as they continue to work toward achieving the goals of the class? In what ways can they continue to work with virtual colleagues to achieve their personal and course goals? (20 minutes)

4. **Post-Course Survey.** Move to the computer laboratory to complete the Post-Course Survey. (20 minutes)

5. **Celebrate successes!** Distribute copies of the participants' lessons to create a lesson portfolio. For an informal celebration, serve pizza. For a more structured celebration, invite small groups of four to construct charts depicting what they learned from the course. Share in a Gallery Walk. Bring closure to the session and the course by reminding the participants to remain in touch through the listserv and plan a reunion. (30 minutes)

Notes

Facilitator's Materials

Individuals and the Change Process

Building a Collegial Culture

Questioning Strategies

Group Processing Techniques

Resources for Facilitators

Individuals and the Change Process

It will be important for you to recognize the participants' wide range of experience, expertise, and comfort with the concepts of engaged learning and technology use.

We have attempted to design a course curriculum and materials responsive to this diversity by:

- Including video and print lessons in different content areas and variations in lesson complexity and technological sophistication.
- Providing instructional examples (e.g., "Navigating the Information Super Nile") that are available through online services and require little design or modification by individual teachers.
- Providing course participants with the opportunity to develop new lessons or refine existing ones.
- Encouraging course sites to provide optional computer lab time for facilitated practice.
- Providing the step-by-step technology guides.

You may wish to consider key concepts of the Concerns Based Adoption Model (CBAM) (Hord, Rutherford, Huling-Austin, & Hall, 1987). This model focuses on the individual, personal, and developmental nature of the change process. It acknowledges and validates individual differences in both attitude and behavior as someone goes through a change process. The concept of stages of concern is a way of thinking about and responding to individual needs:

- Awareness—limited knowledge or interest
- Informational—limited knowledge, but interest in learning more
- Personal—focus on impact on self
- Management—focus on preparing, organizing, scheduling
- Consequences—focus on impact on students
- Collaboration—interest in working with colleagues
- Refocusing—interest in making adaptations

As you think about these stages of concern, be careful not to oversimplify the model and pigeonhole course participants. Keep in mind the complexity of the change process and the likelihood that an individual has multiple concerns and needs simultaneously.

The Professional Development model described on page 9 can also be useful as you respond to individual concerns. We encourage you to use this model and consider a variety of ways that individuals might:

- Build a Knowledge Base
- Observe Models and Cases
- Reflect on Practice
- Change Practice
- Gain and Share Expertise

Remember that these dimensions are not meant to be isolated. For example, as teachers observe instruction, they will also be reflecting upon and connecting it to their own practice in order to change their practice.

Michael Fullan (1993) offers another view of change with his "eight basic lessons of the new paradigm of change." These ideas point to the complexity and unpredictability of individual and organizational change. Fullan's ideas are described in full in his book *Change Forces*. The "lessons" are summarized here for your reference and information:

- You can't mandate what matters.
- Change is a journey not a blueprint.
- Problems are our friends.
- Vision and strategic planning come later.
- Individualism and collectivism must have equal power.
- Neither centralization nor decentralization works.
- Every person is a change agent.

Building a Collegial Culture

Teaching has often been described as a lonely profession. Teachers have had limited opportunities and often little encouragement to learn from and with their peers as they have customarily planned, implemented, and assessed their own instruction. Professional development has traditionally been structured as an individual process; teachers take courses, attend workshops, and attempt new instructional approaches on their own. Despite the wealth of professional expertise and range of talents that exist, collegial planning or study has been the exception and not the rule. Observation and discussion of instruction is most typically equated with evaluation.

As a result of this isolation, when teachers encounter instructional barriers they are often reluctant to discuss their problems or seek counsel from colleagues. Similarly, when they have instructional success there is little opportunity or reward for sharing their experiences.

A key role of the course facilitator, therefore, will be to structure the sessions so that participants can share lesson ideas and feedback in a comfortable, nonthreatening environment. It should be both beneficial *and* enjoyable to collaborate.

You will set the tone for the course when you first begin to analyze and refine the lessons of others (videotapes, lesson plans, scenarios). It will be crucial to model an approach that is informal, collegial, and nonjudgmental.

Consider the following suggestions:

- It is likely that some participants will be reluctant to analyze anyone's lessons, including the video examples. You may wish to discuss the purpose before you do it the first time. Additionally, they will probably be more comfortable discussing lessons if you begin by talking about what works and what they liked about it. You can then move to ways the lesson might be adapted or strengthened.
- After analyzing the first few videotapes, debrief the process to raise any concerns about the individual and collective approach. Establish ground rules and group norms for future sessions.
- Participants may be more comfortable if the collegial feedback is semistructured. (See for example, the Constructive Friends Feedback Form in Appendix I and the Helping Trio technique in Group Processing Techiques under the Facilitator's Material section.)
- Your group may want to develop its own format for sharing and feedback.

- Allow participants to *select* a friend or familiar colleague to work with during critical friend activities.
- Encourage participants to control the type of input they get. Let *them* pose questions, concerns, and dilemmas to their critical friend.
- Monitor small group discussions to listen for specific words, phrases, or actions that may threaten people.
- Suggest that participants who are working in pairs start their discussions by sharing something personal, e.g., a hobby, book or movie review, vacation plans, and so on.
- Don't underestimate the power of food to create a more informal setting. If course sessions take place after school, you may want to provide refreshments or ask participants to take turns bringing snacks.

Questioning Strategies

The types of questions you pose and your responses to individual ideas can have an impact on the thinking and responses that follow. You can model effective strategies that will be helpful as participants work together to analyze, design, and refine lessons.

Ask open-ended questions. Reword your questions to avoid yes/no responses.

Don't ask for meaning, ask for use. Focus on practice; don't limit yourself to theory. Don't become overly concerned with meanings. For example, rather than asking teachers to *define* engaged learning, ask them to share instructional examples that *demonstrate* engaged learning.

Encourage specific responses by asking questions such as:

- What will you see and hear students doing?
- What parts of the lesson did you feel were most successful?
- How did the actual lesson compare with what you had planned?

Avoid evaluative questions. Questions that begin, "What do you mean by that?" or "Why would you do that?" can imply judgment and discourage participation.

Acknowledge all responses. Passive (e.g., a nod) and active (e.g., paraphrasing) acknowledgment demonstrates that a response is valued.

Use praise sparingly: You don't want to convey the message that there is only one correct response or that it is your role to make that determination.

Group Process Techniques[2]

Action Lists

Goal: Generate ideas for action

Process:

1. Participants keep a list of ideas and actions that will help them apply the ideas they are discussing.
2. Participants determine a time when they will try each idea.

Brainstorming

Goal: Quickly generate many ideas in response to a given question or issue

Process: Four methods of brainstorming are described below:

1. **Freewheeling**
   - Group members call out their ideas.
   - A scribe writes down the exact words of each participant.
2. **Carousel**
   - Write a series of questions or topics on the issue on separate sheets of paper.
   - Divide participants into small groups (3–5) and have each group stand in front of a sheet of paper.
   - Each group spends 2–3 minutes generating ideas and recording them on the paper.
   - Each group moves to the next spot where they read the ideas and add additional ones.
   - Continue the cycle until all groups have been in all locations.
   - Participants take a Gallery Walk to read all posted ideas.

[2]These techniques have been reprinted and adapted from three sources: (1) *Learning through technology: Study group framework and profile tool,* 1996, Illinois State Board of Education and NCREL; (2) Peggy A. Sharp, Robert Garmston, & Bruce Wellman, "Premier facilitation for learning organization," NSDC Preconference Session, December 10–12, 1994; and (3) *Facilitating change in science and mathematics education: A toolkit for professional developers and alternative assessment toolkit, NCREL.*

3. **One-Two-Six**

   - Individuals write down one idea for action.
   - Participants pair off to share their ideas and agree on one.
   - Participants form groups of six to share their ideas and agree on one.
   - Post the ideas for discussion and next steps.

4. **Slip Method**

   - Divide participants into small groups.
   - Individuals in each group write down their ideas on index cards or Post-it Notes.
   - Each group organizes its ideas into themes and shares them with other groups.

Concept Walk

Goal: Preview the materials and book (Participant's Manual)

Process:

- Pose questions about the sections of the book.
- Divide the group in pairs.
- Invite the pairs to skim a section of the book.
- Each pair will briefly describe the contents of a section.
- While the groups describe their sections, the class can read the section being discussed.
- Close the activity by relating the sessions to the course goals.

Fast-Write

Goal: Quickly articulate ideas on a topic

Process:

- Participants listen to a statement, question, or story.
- Participants write without stopping for 2–3 minutes, jotting down whatever comes to mind. Their pens should not leave the page.

Forced-Choice Stickers

Goal: Set priorities and reach agreement on next steps

Process:

- List action steps on a large sheet of paper.
- Distribute a set number of stickers (e.g., round signal dots) to each person.
- Each person must demonstrate his or her priorities by "spending" the stickers, either distributing them across options or weighting them on one or two choices.
- After all group members have distributed their stickers, you will have a visual representation of the group's priorities.

Gallery Walk

Goal: Generate ideas as an adaptation of the Museum Tour

Process:

- Pose a problem or question to the group as a whole.
- Divide participants into subgroups to explore different perspectives of the problem.
- Members of the subgroups can write, draw, diagram, and so on, their collective response to the problem or question on a large piece of chart paper.
- Post the chart paper on the walls around the room.
- One member of each group stands by the group's chart to act as an expert while course participants walk around the room, read the charts, and ask questions about the information listed.
- When group members complete their tour, they can take the place of the group members acting as experts to ensure that everyone has an opportunity to see every chart.

Helping Trios

Goal: Offer suggestions in response to a colleague's questions and dilemmas

Process:

- Person A describes a problem or concern to Persons B and C.
- B and C ask A clarification questions.

- B and C suggest solution strategies to A.
- A asks B and C clarification questions.
- Repeat the process for B and C.

Jigsaw

Goal: Learn content by becoming an expert on a topic, then share that expertise with others

Process:

- Participants begin in home groups. Each member of the home group selects or is given a different reading assignment.
- The home group splits into expert groups. There is one expert group for each reading. The expert groups read and discuss their particular topic.
- The home groups reconvene, with each member sharing what he or she has learned with other group members.

K-W-L (Know-Want to Know-Learned)

Goal: Activate prior knowledge and set a purpose for learning

Process:

- Divide a piece of chart paper into three columns: K W L
- *Prior* to a learning activity ask the group to share what they already know about the topic and jot ideas in the "K" column. Don't critique the ideas for accuracy. The group then categorizes the items under the K.
- Next ask the group what they would like to know about the topic and jot their remarks down in the "W" column. The group then categorizes items under the W.
- *After* the learning activity ask the group to reconsider what they have under the K. Did they discover that any of their ideas were inaccurate?
- Ask them to share what they learned and jot it down under the L.
- Compare the K and L columns to see if there are changes in the group's understanding of the topic.
- Compare the W and L columns. If there are things that the group wanted to learn and didn't, ask for suggestions on how they might learn those things. You may want to list them under a fourth, H (How), column.

Museum Tour

Goal: Generate and share ideas

Process:

- Pose a problem or question(s) to the group as a whole.
- Subdivide the group into clusters of 4–8 people.
- Give each subgroup several pads of Post-it Notes.
- Allow each individual a few minutes to generate ideas in response to the focus question(s) or problem. Individuals should record each idea on a separate note.
- Ask table members to share their ideas and cluster them into similar categories, posting them on chart paper. They should label each category.
- Direct the groups to rotate clockwise around the tables, viewing each group's display. Tell them that they will have several minutes at each station and that you'll signal them when to move to the next station.
- After touring all stations, the groups return to their tables to discuss what they have learned from the other groups.

Questions With Post-it™ Notes

Goal: Generate and encourage questions from the participants.

Process:

- Prior to the beginning of the session, place Post-it Notes on every table and tape a large sheet of chart paper on the wall.
- At the beginning of the session, invite the participants to write any questions they have on the Post-it Notes and place them on the chart paper for the facilitator.
- At the end of the session (or during transition times), the facilitator will answer the questions.
- Questions should be grouped thematically if they seem to cluster. Often isolated questions, when grouped, reveal larger-scale conceptual misunderstandings.

Think-Pair-Share

Goal: Immediately engage participants in a topic

Process:

- Participants spend a few minutes thinking about and jotting down responses to a question or problem.
- Participants form pairs to discuss their responses.
- Each pair summarizes and shares its comments with the entire group or a larger subset.

Three-Step Interview

Goal: Link new information to prior knowledge and experiences

Process:

- Divide participants into groups of four. Ask them to form pairs within their group.
- Each pair has an interviewer and interviewee.
- Person A asks Person B a set of questions.
- Person A takes notes.
- Reverse roles for A and B.
- The group of four rejoins, and the members of each pair share what they have learned from the people they interviewed.

Three-Two-One

Goal: Bring closure to a session or review at the beginning of a new session.

Process:

- Divide the participants into small groups.
- Invite them to share one sheet of paper and write a large 3 near the top, a large 2 in the middle, and a 1 near the bottom of the page.
- Direct the participants to write three good ideas that they learned, two ideas that they can use in their classrooms, and one confusion (an area needing clarification).

- Debrief by having each group share their ideas and respond to the confusion by asking the group for input.

TILT (Things I Learned Today)

Goal: Review what participants learned during a session.

Process:

- Invite the participants to do a Fast-Write, recalling everything they learned during the session.
- After three minutes, ask them to share their writings with the larger group.

Resources for Facilitators

Coaching/Mentoring

Cook, C. J., & Rasmussen, C. M. (1989). *Cues for effective questioning*. Available from the authors at 630-218-1079 or cook@ncrel.org (e-mail).

Costa, A .L., & Garmston, R. J. (1994). *Cognitive coaching: A foundation for renaissance schools*. Norwood, MA: Christopher-Gordon Publishers, Inc.

Feiman-Nemser, S., & Parker, M. (1992, Spring). *Mentoring in context: A comparison of two U.S. programs for beginning teachers*. East Lansing, MI: Michigan State University, National Center for Research on Teacher Learning.

Change Process

Fullan, M. (1993). *Change forces: Probing the depths of educational reform*. Bristol, PA: The Falmer Press.

Hord, S. M., Rutherford, W., Huling-Austin, L., & Hall, G. (1987). *Taking charge of change*. Alexandria, VA: Association for Supervision and Curriculum Development and Austin, TX: Southwest Educational Development Laboratory.

Curriculum Design

Jones, B. F., Rasmussen, C., & Moffitt, M. (Eds.). (1996). *Transformations: High school reform to promote student performance*. Oak Brook, IL: North Central Regional Educational Laboratory.

Jones, B. F., Rasmussen, C., & Moffitt, M. (1997). *Real-life problem solving: A collaborative approach to interdisciplinary teaching and learning*. Washington, DC: American Psychological Association.

Facilitation

Killion, J. P, & Simmons, L. A. (1992). The Zen of facilitation. *Journal of Staff Development, 13*(3), 127–130.

Professional Development

Lieberman, A., & McLaughlin, M. W. (1992). Networks for educational change: Powerful and problematic. *Phi Delta Kappan, 73*(9), 673–77.

Lieberman, A., & Miller, L. (1991). Revisiting the social realities of teaching. In A. Lieberman & L. Miller (Eds.), *Staff development for education in the 90's* (pp. 92–109). New York: Teachers College Press.

McLaughlin, M. W. (1991). Enabling professional development: What have we learned? In A. Lieberman & L. Miller (Eds). *Staff development for education in the 90's* (pp. 61–82). New York: Teachers College Press.

McLaughlin, M. W., & Talbert, J. E. (1993). *Contexts that matter for teaching and learning*. Stanford, CA: Stanford University.

Miller, L. (1992). Curriculum work as staff development. In W. T. Pink, & A. A. Hyde (Eds.), *Effective staff development for school change* (pp. 95–109). Norwood, NJ: Ablex Publishing Corporation.

North Central Regional Educational Laboratory. (1994). *Policy briefs: Professional development: Changing times* [Report 4]. Oak Brook, IL: Author.

Technology

Fine, C. S., Anderson, M., Jones, B. F., & Handler, M. (1996). *Learning through technology: Study group framework and profile tool.* Oak Brook, IL: North Central Regional Educational Laboratory and Springfield, IL: Illinois State Board of Education.

Integrating technology into teaching (1997). [Entire issue]. *Educationsl Leadership, 55*(3).

Jones, B. F., Valdez, G., Nowakowski, J., & Rasmussen, C. (1995). *Plugging in: Choosing and using educational technology.* Washington, DC: Council for Educational Development and Research and Oak Brook, IL: North Central Regional Educational Laboratory.

Planning and Implementation Guide

Planning Questions	Planning Information	Date Needed	Date Accomplished	Notes (people to contact etc.)
PREPARING TO OFFER THE COURSE				
To whom will I offer the *Learning With Technology* Course?				
How will I recruit participants?				
How can I inform prospective participants that the course is being offered?				
When will I offer the course?				
With what other courses can the *Learning With Technology* Course be integrated or linked?				
How many times will I offer the course?				
Where will the course be held?				
What will be the fee for the course?				
How will I get the materials for the course? From whom?				

Planning Questions	Planning Information	Date Needed	Date Accomplished	Notes (people to contact etc.)
OFFER THE COURSE				
Over how many weeks will I offer the course?				
Where will the course be held? Will all sessions be held at the same location?				
What are other possible ways of delivering the sessions?				
What equipment do I need for the course?				
Whom do I need to help me during the course? (e.g., technical support, site coordinator)				

FOLLOW-UP OF THE COURSE				
How will course participants continue to collaborate?				
What is my role in facilitating ongoing collaboration and discussion?				
What will participants need from me to help them routinely use what they have learned about Engaged Learning and Technology?				

Facilitator's Academy Planning Documents

Planning and Implementation Guide

Course Planning Form

Session Planning Tool

Course Tools for Class Sessions and Assignments

Course Requirements Checklist

Course Planning Form

Date	Class Plans (Write short descriptions of the tasks and activities that need to be accomplished during the session. Note how much time it will take to do each activity.)	Handouts (Identify handouts that are needed for each session.)	Assignments (Identify the assignment for each session.)
Prep Date Completed:		Identify all materials that need to be prepared before the course and what assignments need to be given to participants before beginning the course so that they can be completed by the first session.	
Session #1 Date: Location:			
Session #2 Date: Location:			
Session #3 Date: Location:			
Session #4 Date: Location:			
Session #5 Date: Location:			
Session #6 Date: Location:			

Session Planning Tool

(Facilitators should reproduce and use for each session)

Session: _____

Date: _____

Objectives: _____ *Learning With Technology* facilitators should state their personal session objectives that might augment the session objectives stated in the Facilitator's Guide.

Room Arrangements:

- Computer Laboratory
- Classroom

Materials, Resources, and Equipment:

- Duplicating needs
- AV equipment
- Materials (Charts, markers, tape, etc.)

Special Arrangements: (food, time adjustments, etc.)

This is the place in which the facilitators can identify specific needs, such as a cofacilitator to help with technology skills.

Activities:

1. Group Process Techniques (refer to the techniques and the page number for the activities of the session)
2. Adaptations: Are there specific adaptations that the group of participants requires?
3. Procedures: Identify the procedures if they are different from those described in the Facilitator's Guide.

After session reflection:

The facilitator can identify specific reflection questions for the session.

Course Tools for Class Sessions and Assignments

PM = Participant's Manual; FG = Facilitator's Guide; App. = Appendix

Note: Participants may wish to use tools during more sessions than specified below, e.g., they may wish to view videos on their own.

Tool	Location	1	2	3	4	5	6
Pre- and Post-Course Survey	Internet	X					X
Online Resource Center	Internet	X	X				
Course Listserv	Internet	X	X	X			
Videotapes				X			
Engaged Learning Essay	PM p. 5	X					
Planning Framework	PM p. 23	X			X	X	X
Print Scenario: The Debate Goes On	PM p. 25			X	X		
Print Scenario: Research and Presentations	PM p. 33			X	X		
Sample Lessons	PM p. 37			X	X	X	
Management Tips	PM p. 55	X					
Tips for Productive Work	PM p. 59		X				
Step-by-Step Guide . . . Web sites	PM p. 61	X					
Step-by-Step Guide . . . Pathways	PM p. 69	X	X				
Step-by-Step Guide . . . Listservs	PM p. 75	X	X				
Learning Actions	PM p. 83				X		
Learning Actions-Engaged Learning	PM p. 85		X		X	X	
Engaged Learning Tasks	PM p. 87		X		X	X	
Examples of Technology Use	PM p. 88				X	X	
Technology Checklist	PM p. 108				X	X	
Advantages/Disadvantages . . . Technology	PM p. 110				X	X	
Group Process Techniques	FG p. 49	X	X	X	X		X
Constructive Friends Feedback Form	FG App. I, p. 75			X	X		
Journal Template	FG App. II, p. 77	X	X	X	X	X	
Engaged Learning Activity	FG App. III, p. 81	X					
Web Site Handout	FG App. III, p. 83	X					
Making a Move	FG App. III, p.85	X	X				
Venn Diagram	FG App. III, p.87			X	X		
Unit Analysis Worksheet	FG App. III, p. 89		X	X	X		
Planning Framework (short form)	FG App. III, p. 91	X			X	X	X
Planning Framework (long form)	FG App. III, p. 93	X			X	X	X

Course Requirements Checklist

http://ncrelsgi.ncrel.org/ncrel/courses/lwt/participant-evaluation.htm
User name: Course
Password: learn > case sensitive

Site of Course: _____ **Ending Date of Course:** _____

Facilitator(s): _____

Course Facilitator: Please check off the forms and activities that were completed for each participant in your *Learning With Technology* course. At the end of the course, please send the completed forms and copies of the participants' course technology lessons to Kim Good, NCREL, 1900 Spring Road, Suite 300, Oak Brook, IL 60523-1480. Thank you!

Participant Name (last, first)	Pre-Course Survey	Post-Course Survey	End-of-Course Evaluation Form	Made posting on LWT listserv	Developed technology lesson

Sample Syllabi

In this section are sample syllabi from the course and Academy. Collect samples from those courses that have already been completed.

Facilitator's Academy Sample Syllabi

Academy Overview: The purpose of the Facilitator's Academy is to provide prospective facilitators with the background information and knowledge necessary to offer the six-session *Learning With Technology* course developed by North Central Regional Educational Laboratory (NCREL). *Learning With Technology* is a course designed for educators who have some experience using the Internet and other high-performance, computer-related technology. Through the course, educators explore the concept of engaged learning, examine the ways in which computer-related technology enhances engaged learning, plan instructional lessons and units, and develop networks of colleagues with whom they can continue to share ideas and develop lessons.

Academy Schedule: During the one-and-a-half to two-day Academy, the facilitators will sample the activities of the six-session course and explore the basic concepts of engaged learning. Additionally, throughout the academy, the facilitators will have opportunities to test the classroom and computer-related activities of the course. Lastly, the facilitators will be able to plan their own courses.

Facilitator's Experience: The participants in the Facilitator's Academy should have experience as trainers, in offering professional development courses and workshops for teachers, and in working with curriculum- and/or technology-related issues.

Academy Syllabi: The following pages include sample syllabi for the Facilitator's Academy.

Sample 1

Facilitator's Academy Agenda

(one and a half days)

Day 1 (full day)

8:00 A.M. Registration and refreshments (general sign-in forms and local registration formalities)

8:30 A.M. (This portion of the Academy takes place in a classroom/conference room setting.) Make introductions. Give overview and goals of the Academy and *Learning With Technology* course. Model a Think-Pair-Share activity to elicit personal expectations, goals, and questions of the participants.

9:00 A.M. Distribute the materials and resources, Facilitator's Guide, Participant's Manual, and the videotapes. Preview the materials, review the goals of the course (FG, p. 3), discuss the NCREL professional development model (FG, p. 9), and review the Planning and Implementation Guide (FG, p. 59) for the delivery of their own courses. Point out that each session has three overarching questions (FG, p. 4).

9:15 A.M. Provide a session-by-session overview (Academy trainers should make a transparency from the Session Overview, FG, p. 79). Have participants complete an abbreviated Engaged Learning Activity. Then, ask them, Why is the Engaged Learning (FG, p. 81) essay included as the foundation activity in the course? How would you share this with the participants in your courses?

10:00 A.M. BREAK (During this time, move to the computer laboratory.)

10:15 A.M. (This is the portion of the Academy when the participants complete their exploration of the computer and online registration.) Begin the computer exploration activities that appear in Session 1 (FG, p. 15). Debrief the session by discussing the importance of participating in the listserv and completing the Pre-Course Survey and Academy registration. Explain how the participants will use the Internet to plan their own instructional lessons and units.

12:00 P.M. LUNCH

1:00 P.M. Start the afternoon in the classroom. Distribute the Unit Analysis Worksheet (FG, p. 89) as a preview for the videotapes. Show the "Historical Fiction" and "Are We There Yet?" videotapes. Then ask the participants how would they use these in their course.

2:00 P.M. BREAK

2:15 P.M. In small groups, ask the facilitators to examine the Planning Tools (PM, p. 83). Then have them read the Print Scenarios (PM, p. 23) and rate them for high and low technology and engagement. Debrief by asking the participants to discuss how they would act as constructive friends to improve the lessons.

3:30 P.M. Assign a review of the Sample Lessons (PM, p. 37) and Planning Framework (FG, p. 15) for discussion on the next morning. Invite the participants to read the entire Engaged Learning essay (PM, p. 5).

Day 2 (half day)

8:00 A.M. Registration and refreshments (local registration formalities)

8:30 A.M. Open by asking for any issues, concerns, or questions that the participants have regarding offering the course.

9:00 A.M. In the computer room, examine the sites on the Sample Lessons and review a sample lesson (the trainer can select the lesson). Debrief by asking the participants how they would use the samples, what changes, if any, they would suggest, and how they would improve the presentation of the samples.

10:00 A.M. BREAK

10:15 A.M. Focus on the Planning Framework and relate it to the participants' state and local standards, benchmarks, or objectives. (If possible, the trainer should acquire and duplicate these before the Academy.) Work through the Framework with sample lessons or lessons that participants hypothetically would design. Debrief by reflecting on the activity and discussing the delivery of the Planning Framework as a component of participants' course.

12:00 P.M. Review and discuss the Facilitator's Enrollment Kit and course marketing and pricing.

12:30 P.M. Participants complete the Academy evaluation and Post-Course Survey and are dismissed.

Optional Activities: During the first session, when the facilitators describe their expectations and goals, they might request some additional training on facilitation skills. Such training could be added to the afternoon of the second day or substituted for some of the activities during the academy.

The participants will work in pairs to plan the facilitation of their courses using the Planning and Implementation Guide (FG, p 59).

Sample 2

Facilitator's Academy Agenda

(two days)

Day 1

8:00 A.M. Registration and refreshments (sign-in and local registration issues)

8:30 A.M. Make introductions. Give overview and goals of the Academy and the *Learning With Technology Course*. Model a Think-Pair-Share activity (FG, p 54) to elicit personal expectations, goals, and questions of the participants.

9:00 A.M. Distribute the materials and resources, Facilitator's Guide, Participant's Manual, and the videotapes. Preview the materials, review the goals of the course (FP, p. 3), discuss the NCREL professional development model (FP, p. 9), and review the Planning and Implementation Guide (FP, p. 59 for the delivery of their own courses. At this time, point out that each session has three overarching questions (FP, p. 4).

9:15 A.M. If the Facilitator's Academy participants request additional assistance in facilitation skills, discuss the information in the Facilitator's Material section (p. 43-58) of the Facilitator's Guide. During the discussion of facilitation skills, point out the group processing techniques that are modeled in this section. Continue to point them out during the remainder of the Academy. This discussion can be started with a double-entry journal (see example below) in which the participants write and share their problems and concerns about facilitating.

Problems and Concerns	Solutions
1. Prior to discussing facilitation skills, invite the participants to write down their problems and concerns about facilitating the course.	1. At the conclusion of this section, invite the participants to write their solutions on this side of the double-entry journal.
2. After the participants write for about three minutes, use the Think-Pair-Share activity so they can share their concerns with the entire group.	2. During the remainder of the Academy, model the group processing techniques and refer to those techniques.
3. The facilitator records their problems on a chart or transparency.	3. The participants will start a list of those techniques and will add to it as new techniques are modeled for the group.
4. Focus on their concerns and discuss the materials in the Facilitator's Guide.	4. Additionally, throughout this discussion, ask the participants for their solutions and the facilitation techniques that they use.

10:30 A.M. BREAK (Move to the computer laboratory during this time.)

10:45 A.M. (This is the portion of the academy when the participants complete their exploration of the computer and register online.) Begin the computer exploration activities that appear in Session 1 (FG, p. 15). Debrief the session by discussing the importance of participating in the listserv and complete the Pre-Course Survey and Academy registration. Explain how the participants will use the Internet, listserv, and Online Resource Center to plan their own instructional lessons and units.

12:00 P.M. LUNCH

1:00 P.M. Provide a session-by-session overview. (Academy trainers should make a transparency from the Session Overview, FG, p. 79). Have participants complete an abbreviated Engaged Learning Activity (FG, p. 81). Then, ask them, Why is the Engaged Learning essay included as the foundation activity in the course? How would you share this with the participants in your courses?

2:00 P.M. BREAK (Move to the computer laboratory during this time.)

2:15 P.M. Do Making a Move (FG, p. 85) or an alternative computer exploration activity using the participants' topics for lesson development. Debrief and return to the seminar room.

3:00 P.M. Using the Unit Analysis Worksheet (FG, p. 89), analyze the "Historical Fiction" video scenario.

3:30 P.M. Dismiss participants with assignments to read the Engaged Learning essay (PM, p. 5) and preview the Sample Lessons (PM, p. 37), a print scenario (PM, p. 23), and Planning Framework (PM, p. 15).

Day 2

8:00 A.M. Registration (local registration formalities)

8:30 A.M. Ask for questions and concerns from the participants about facilitating this course.

8:45 A.M. Review "Historical Fiction" and repeat the activity using the video scenario "Are We There Yet?"

9:15 A.M. In small groups, direct the facilitators to examine the Planning Tools (PM, p. 83). After reviewing them, direct participants to read the Print Scenarios (PM, p. 23) and rate them for high and low technology and engagement. Debrief by asking the facilitators to discuss how they would act as constructive friends (FG, p. 75) to improve the lessons.

10:15 A.M. BREAK (Move to the computer laboratory at this time.)

10:30 A.M. In the computer room, room, examine the sites on the Sample Lessons (PM, p. 37) and review a sample lesson (the trainer can select the lesson). Debrief by asking the participants how they would use the samples, what changes, if any, they would suggest, and how they would improve the presentation of the samples.

12:00 P.M. LUNCH

1:00 P.M. Focus on the Planning Framework (PM, p. 15) and relate it to the facilitators' state and local standards, benchmarks, or objectives. (If possible, the trainer should acquire and duplicate these before the Academy.) Work through the Framework with sample lessons or lessons that they hypothetically would design. Debrief by reflecting on the activity and discussing the delivery of the Planning Framework as a component of the participants' course.

2:15 P.M. BREAK

2:30 A.M. The participants will work in pairs to plan their courses.

3:15 P.M. Review and discuss the Facilitator's Enrollment Kit and course marketing and pricing.

3:30 P.M. Complete evaluation and Post-Course Survey and then dismiss participants.

Sample 3

Use the Sample 2 agenda and substitute the 9:15 A.M. activity on the first day for specific training in the use of the Internet if necessary.

Appendices

I. Constructive Friends Feedback Form

II. Journal Template

III. Masters

Session Overview

Engaged Learning Activity

Web Site Handout

Making a Move

Venn Diagram

Unit Analysis Worksheet

Planning Framework (short form)

Planning Framework (long form)

Appendix I: Constructive Friends Feedback Form

Thoughts from a constructive friend for_____
Name _____ Date _____
I particularly liked . . .
You might want to look at these resources . . .
Did you think about . . .
I wondered about . . .
I've been successful with similar activities when . . .

Appendix II: Journal Template

Journal	Date _____
Questions and points to ponder:	
Ideals, examples, and stories to share:	
Good ideas from colleagues:	
Things to try:	

Appendix III. Masters

Session Overview

Engaged Learning Activity

Web Site Handout

Making a Move

Venn Diagram

Unit Analysis Worksheet

Planning Framework (short form)

Planning Framework (long form)

Session Overview

Session 1

Discuss course and goals

Explore the concept of engaged learning

Learn about the World Wide Web (WWW) as an instructional resource

Session 2

Use the World Wide Web as a learning activity

Sign up for the listserv

Session 3

Analyze video examples of instruction

Compare two video examples

Introduce concept of Constructive Friends (peer coaching)

Session 4

Analyze Print Scenarios

Revisit Constructive Friends (peer coaching)

Begin to design and refine an instructional activity using the Planning Framework and tools.

Session 5

Analyze sample lessons

Revisit Constructive Friends (peer coaching)

Continue to design (or refine) an instructional activity using the Planning Framework

Session 6

Share lesson designs

Adapt lesson ideas to other grade levels and content areas

Create a portfolio of lesson ideas

Reexamine individual and collective goals and discuss strategies for continued collaboration and learning

Celebrate success

Engaged Learning Activity

Think of a time when you got satisfaction from learning something that someone else taught you. This may have been in school or a class, or a lesson outside of a school setting, or an informal learning experience.

1. What was the content of the lesson?

2. What tasks or activities did you do? What was it about the lesson or the learning process that helped you *understand* the content?

3. How would you describe your role as a student in this lesson?

4. How would you describe the teacher's role? What did the teacher do to assist you in learning the content or completing the task?

5. How were you assessed or how did you assess yourself in this learning experience?

6. In what ways did you find your learning valuable?

After talking about meaningful learning experiences you and others have had, develop a list of characteristics that describe what you think *engaged learning* is.

Characteristics of Engaged Learning

Web Site Handout

Engaged Learning

Highly engaged learners take an active role in meaningful tasks and activities. They assume increasing responsibility for their own learning and demonstrate their understanding in many ways. They explore a variety of resources and strive for deep understanding through experiences that directly apply to their lives, promote curiosity and inquiry, and stimulate new interests.

Web sites to explore:

http://whyfiles.news.wisc.edu/

http://www.mcrel.org/connect/geo.html

http://forum.swarthmore.edu/dr.math/

http://www.ran.org/ran/kids_action/index.html

http://www.ncrel.org/ncrtec/picture.htm

Learning With Technology Online Resource Center (Web Site):

http://ncrelsgi.ncrel.org/ncrel/courses/lwt/

As you explore each site, always ask yourself: How could elements of this web site make an instructional activity even more engaging and what other resources (print or electronic) would I want to use?

Making a Move

As part of its restructuring, corporate headquarters will be closing your office and relocating work groups to their remaining sites. Your group has been one of the most successful teams, and the executives hope that the majority of you will choose to transfer. In fact, they have asked your group to recommend whether to move your department to the Tucson or Atlanta office. Unfortunately, you only have until the end of the week to decide. Therefore, as quickly as possible, your group must learn as much as you can about both locations. While mindful of your individual priorities, you'll need to reach consensus on a recommendation.

Each group will explore information resources on the World Wide Web in order to compare the cities with respect to:

- Cost of living
- Local economy
- Real estate costs
- Neighborhoods
- School system
- Hospitals and health care system
- Climate
- Local/state politics
- Public transportation and roads
- Environmental issues
- Cultural/recreation opportunities

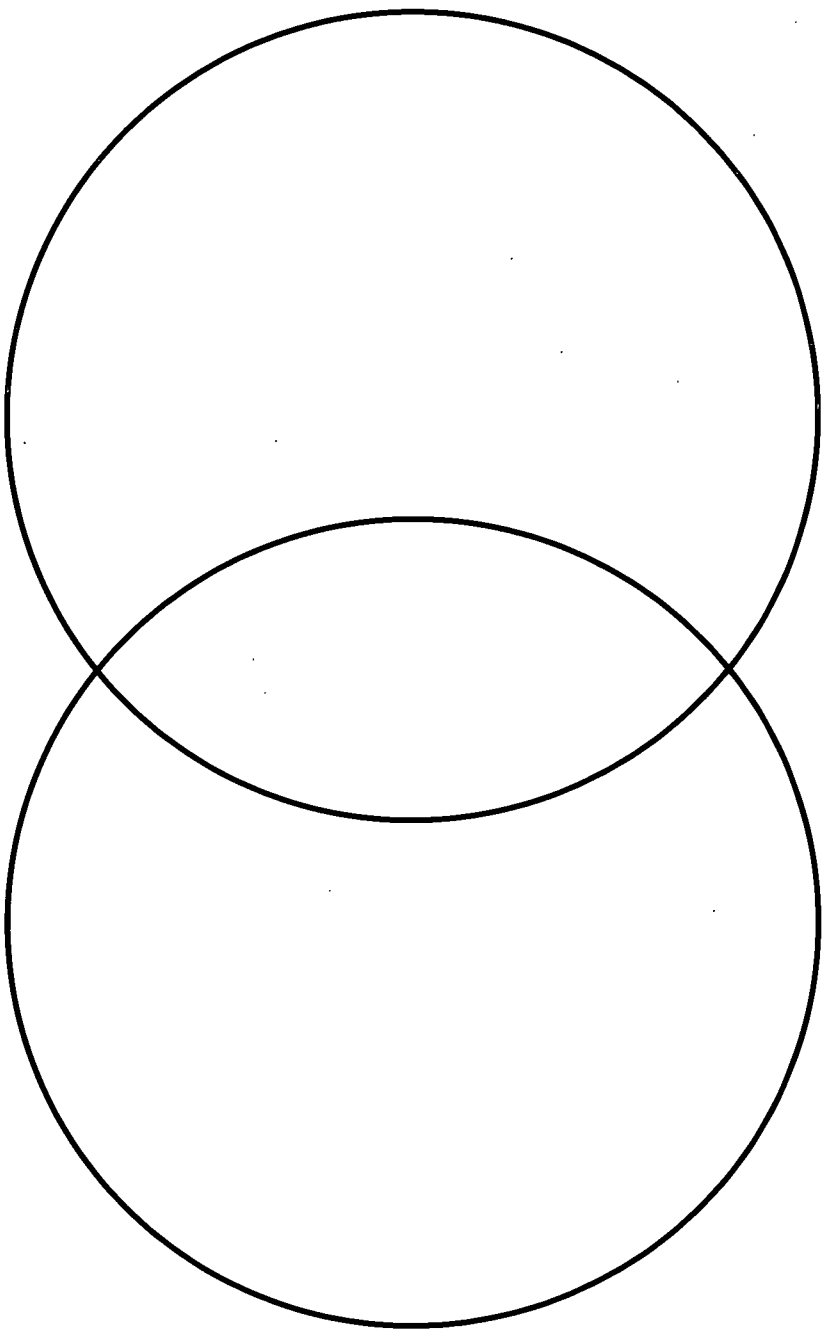
Your group must:

- Determine which are most important to them (you probably don't have time to investigate all of them).
- Decide how to complete the task most efficiently.
- Conduct the search and gather information.
- Discuss your findings and agree on a recommendation.
- Prepare to tell the corporate office which location you chose and provide a rationale.

As you are working through this activity think about:

- In what ways does this activity promote worthwhile and meaningful learning?
- In what ways does this activity promote engagd learning?
- In what ways does technology enhance and extend the activity in ways that would not be possible without it?

Venn Diagram



Unit Analysis Worksheet

MEANINGFUL, WORTHWHILE LEARNING
Why is the unit worth doing? Why is it appropriate for your students? What makes the unit effective? What evidence do you have for your conclusion?
What important content and concepts are students learning? What local, state, or national standards are addressed?
What important basic and advanced skills are students learning? How are students learning to use skills in strategic ways?
Are students engaged in a range of learning actions? How do students demonstrate a range of learning actions? (Refer to pages 5-14 in the Participant's Manual for descriptions of learning actions.) How do they: Build knowledge and skills? Learn independently and with others? Demonstrate knowledge, ability, and creativity? Manage learning?

ENGAGED LEARNING (Refer to the Engaged Learning essay on pages 5-14 in the Participant's Manual for descriptions of indicators.)
Is the unit engaging? How is instruction collaborative, interactive, and generative?
What are students' roles in the unit? If you were to observe them, what would you see them doing? Hear them talking about? How does it reflect engaged learning?
What is the teacher's role? What does the teacher do to guide and facilitate students' learning?
Explain the task. In what ways is it challenging, authentic, and multidisciplinary?
Explain the unit assessment(s). How is it fully integrated into daily activities? How do assessments allow students to "show what they know" in work samples, demonstrations, and presentations?

TECHNOLOGY AND WORTHWHILE, ENGAGED LEARNING
What kind of technology is being used? How does this technology enhance students' learning content, concepts, and basic and advanced skills?
What kind of high-performance technology is used in the unit? How could it be used to extend students' learning content, concepts, and basic and advanced skills?
How does technology help change or enhance students' roles, teachers' roles, the task, and the assessment?

Planning Framework (short form)

Title:

Subject Matter Emphasis and Level:

Brief Description of the Lesson:

Goals:

Content:

Prior Learning, Interests, Misconceptions, and Conceptual Difficulties:

Major Learning Activities:

Materials and Resources:

Books and Other Familiar Resources:

Community Resources:

Technology Resources:

Assessment:

Management:

Support Services and Special Teacher Notes:

Timeline:

Planning Framework (long form)

Title:

Subject Matter Emphasis and Level:

Brief Description of the Lesson/Unit:

Goals: Why are you teaching this lesson or unit? What are the goals? How do they relate to school, district, and/or state standards/benchmarks and outcomes? What developing knowledge, skills, habits of mind, and attitudes do you expect students to gain?

Content: What important content will you teach in this lesson or unit? Will you present the content as a problem, theme, issue, or topic? What role will students play in selecting content? In what ways will this content promote worthwhile and engaged learning?

Prior Learning, Interests, Misconceptions, and Conceptual Difficulties: What student needs, interests, and prior learning are a foundation for this lesson or unit? What conceptual difficulties might students have? How will the lesson or unit address these?

Planning Framework (long form continued)

Major Learning Activities: What worthwhile and engaging learning activities and tasks do you plan? What learning actions will they address? How will you use community and technological resources effectively to enhance students' learning?

Materials and Resources:

Books and Other Familiar Resources:

Community Resources:

Technology Resources:

Planning Framework (long form continued)

Assessment: What procedures will you use? How will you build them into the lesson? How will you guide students to assess themselves? How can technology enhance assessment?

Management: How will you manage students working in cooperative or collaborative groups? with partners? independently? How will you arrange the classroom physically? Where will students work? in the classroom, in the resource center, in a computer lab, or another location (e.g., at a museum)? How will you deal with students who need extra help? How will you help students who have special needs?

Support Services and Special Teacher Notes: What help will you need with computer hardware or with software, listservs, e-mail, the Internet, or other technology application? What other help will you need, such as a special education teacher to advise or assist you with special students? What professional development opportunities would you like?

Timeline: What is the duration of this unit or lesson? How much time will be devoted to this unit or lesson daily, weekly, and so on? What related units and lessons proceed this plan? What units or lessons will follow it?

Facilitator's Academy Evaluation Material

Academy Participant Profile Form

Academy Participant Evaluation Form

Academy Participant Profile Form

Academy
Course Participant
Course Facilitator
Course Evaluator

Site of Academy: _____ **Date of Academy:** _____

Name _____
(First) (Last) (Title - Mr., Ms., Dr.)

1. Professional Role in Organization *(Check primary role only.)*

a. ❑ Professional development provider
b. ❑ Curriculum specialist
c. ❑ Technology specialist
d. ❑ Learning resource specialist/librarian
e. ❑ Other (describe)

Organization Name: _____

Organization Address: _____

City: _____ **State:** _____ **Zip Code:** _____

Organization Phone Number: _____ **Fax Number:** _____

E-mail Address: _____

2. Are you participating in the Facilitator's Academy for any of the following types of credit?
(Check all that apply and indicate the number of credit hours and the name of the institution that is granting credit.)

a. ❑ Graduate Credit # of hours _____ Institution _____
b. ❑ Continuing Education Credit (CEU) # of hours _____ Institution _____
c. ❑ Recertification # of hours _____ Institution _____
d. ❑ In-district Staff Development # of hours _____ Institution _____

3. How did you hear about the Facilitator's Academy? _____

_____

_____

4. Planned date(s) of offering the course? _____

_____

_____

Academy Participant Evaluation Form

Academy
Course Participant
Course Facilitator
Course Evaluator

Site of Academy: _____ **Date of Academy:** _____

Academy Facilitator(s) _____

1. Professional Role *(check primary role only)*

a. ❑ Curriculum director
b. ❑ Technology specialist
c. ❑ Professional development/inservice provider
d. ❑ Content consultant (content area)_____
e. ❑ Other (describe) _____

Please respond to the following items by giving your perceptions of the Facilitator's Academy components listed below using a scale of 1 to 4. Use these descriptors as guidelines, and circle the number that matches your assessment of that component.

1 = very poor, needs considerable improvement
2 = marginally acceptable
3 = good
4 = outstanding, superior, "right on target"

2. Academy Design and Delivery:	**1**	**2**	**3**	**4**
a. ❑ How the Academy was conducted (sequencing, pace)	❑	❑	❑	❑
b. ❑ Length of Academy (number of days)	❑	❑	❑	❑
c. ❑ Allocation of collaborative work time	❑	❑	❑	❑
d. ❑ Effectiveness of materials (handouts, simulation, videos, etc.)	❑	❑	❑	❑
e. ❑ Level of interaction between NCREL trainers and participants	❑	❑	❑	❑
f. ❑ Level of interaction among participants	❑	❑	❑	❑

3. Academy Facilitator(s) (NCREL Trainers):	**1**	**2**	**3**	**4**
a. ❑ Communication of information	❑	❑	❑	❑
b. ❑ Preparation and organization	❑	❑	❑	❑
c. ❑ Knowledge of material	❑	❑	❑	❑
d. ❑ Response to questions	❑	❑	❑	❑
e. ❑ Assistance provided	❑	❑	❑	❑
f. ❑ Engagement and motivation	❑	❑	❑	❑

4. Academy Impact:	**1**	**2**	**3**	**4**
a. ❑ Enhanced your understanding of engaged and worthwhile learning	❑	❑	❑	❑
b. ❑ Enhanced your understanding of how technology can be used to promote engaged and worthwhile learning	❑	❑	❑	❑
c. ❑ Had content that was relevant to your clients' needs	❑	❑	❑	❑
d. ❑ Stimulated you to continue investigating the topic	❑	❑	❑	❑
e. ❑ Motivated you in your professional role to apply what was learned	❑	❑	❑	❑
f. ❑ Overall Academy rating	❑	❑	❑	❑

Academy
Course Participant
Course Facilitator
Course Evaluator

Academy Participant Evaluation Form (continued)

5. Comments:

a. What were your expectations for the Academy? Were they met?

b. What two to three things from the Academy did you find most useful?

c. What, if anything, about the Academy would you change or modify? In what ways?

d. When will you offer the *Learning With Technology* course?

e. To whom will you offer the course?

f. How will you structure it (weekly, twice a month, in districts, at Intermediate Units, and so on)?

Learning With Technology Course Evaluation Material

Learning With Technology Course Evaluation

Online Course Participant Profile Form

Online Course Participant Pre-Course Survey

Online Course Participant Post-Course Servey

Online End-of-Course Participant Evaluation Form

Online Facilitator Course Evaluation Form

Course Observation Form

Semistructured Targeted Course Interview Protocol

Learning With Technology Course Evaluation

The evaluation component of the *Learning With Technology* course is part of a larger initiative to study the science of "scaling up" (i.e., moving an effective educational program from a limited number of sites to a larger number while maintaining program integrity). The evaluation will provide both process and impact information about the course.

The *Learning With Technology* course evaluation will be conducted by NCREL's Evaluation and Policy Information Center. The evaluators will investigate the breadth, implementation, and impact of the course. For breadth, they will look at numbers—how many teachers or other school personnel have participated in the course. For implementation, the evaluators will attempt to answer key questions regarding delivery of the course—specifically regarding quality, fidelity, and thoroughness of course instruction. To determine the nature and level of impact on participants, they will ask the following questions: What do participants learn? How do they apply what they have learned? What are the resulting changes in teaching and learning?

The evaluators will use a wide range of data collection tools, including observation of activities, focus groups, individual interviews, survey instruments, reaction forms, and "opinionnaires." These instruments will gauge changes in attitudes and impressions as well as skill and knowledge levels. Most importantly, they also will help gauge changes in behavior.

The course evaluation forms are available at the course Web site (http://ncrelsgi.ncrel.org/ncrel/courses/lwt/). Participants should have access to the Internet during the first and last sessions in order to complete these forms online. For participants who are unable to complete the forms online, paper versions are provided in the *Participant's Manual*. Following is a brief explanation of the instruments and data collection methods and how they should be administered.

Online Course Participant Profile Form

The Online Course Participant Profile Form should be administered by the facilitator and completed by each participant at the **beginning of the course.** This form captures demographic information that will be collected in a course participant database and used to track the types of individuals taking the course. The form also gathers information on why participants enrolled in the course and what other similar courses they have taken (prior knowledge). The facilitator should ensure that participants complete the form online. However, if this is not possible, the facilitator should ask participants to complete the

Profile Form located in their *Participant's Manual* and then return all completed forms to NCREL.

The Online Course Participant Profile Form is located on the course Web site (http://ncrelsgi.ncrel.org/ncrel/courses/lwt/) in the section entitled "Course Participant Evaluation Forms." The site is password protected. The user name is "Course" and the password is "learn." Both words are case sensitive and must be typed exactly as they appear, omitting the quotation marks.

Online Participant Pre- and Post-Survey

The purpose of the Online Pre- and Post-Course Surveys is to assess participants' knowledge and application of key course components. The surveys should be completed by all participants during the **first and last sessions.** The facilitator should ensure that participants complete the surveys online. However, if this is not possible, the facilitator should ask participants to complete the surveys located in their *Participant's Manual* and then return all completed forms to NCREL.

The Online Participant Pre- and Post-Course Surveys are located on the course Web site (http://ncrelsgi.ncrel.org/ncrel/courses/lwt/) in the section entitled "Course Participant Evaluation Forms." The site is password protected. The user name is "Course" and the password is "learn." Both words are case sensitive and must be typed exactly as they appear, omitting the quotation marks.

Online End-of-Course Participant Evaluation Form

During the final session, participants should complete the Online End-of-Course Participant Evaluation Form. This form gathers participants' perceptions of the effectiveness of various aspects of the course in improving their knowledge and skills relating to integrating technology into the curriculum to promote engaged learning. The facilitator should ensure that participants complete the form online. However, if this is not possible, the facilitator should ask participants to complete the form located in their *Participant's Manual* and then return all completed forms to NCREL.

The Online End-of-Course Evaluation Form is located on the course Web site (http://ncrelsgi.ncrel.org/ncrel/courses/lwt/) in the section entitled "Course Participant Evaluation Forms." The site is password protected. The user name is "Course" and the password is "learn." Both words are case sensitive and must be typed exactly as they appear, omitting the quotation marks.

Facilitator Journal

The facilitator should maintain a journal **throughout the course**. Journal entries should include activities and resources used during each session and modifications from the original course design, noting what did and did not work well. Whenever possible, the facilitators also should include participants' reactions to the course. **In addition to their journal, facilitators should provide copies of syllabi, additional resources (e.g., handouts), and participants' completed lesson plans.**

Online Facilitator Course Evaluation Form

The Online Facilitator Course Evaluation Form should be completed by the facilitator at the **end of the course**. This instrument documents which resources the evaluator used and found to be of value when conducting the course.

The Online Facilitator Course Evaluation Form is located on the course Web site (http://ncrelsgi.ncrel.org/ncrel/courses/lwt/) in the section entitled "Course Facilitator Evaluation Forms." The site is password protected. The user name is "Course" and the password is "learn." Both words are case sensitive and must be typed exactly as they appear, omitting the quotation marks.

Course Observation Form

An NCREL evaluator or a designee will observe selected sessions to determine to what extent the course is being implemented as it was designed and to track modifications to the original design. The purpose of this activity is to document any changes and assess how they affect the fidelity of course implementation. The form is designed to collect both qualitative and quantitative information about course implementation. The evaluator should complete the form while observing the session.

Semistructured, Targeted Course Interview Protocol

Throughout the course, preferably after each session, an NCREL evaluator or designee will gather feedback from participants through semistructured, targeted interviews. The purpose of the interviews is to gather information about participants' perceptions of the class, what they are learning, and how they plan to apply their new knowledge and skills.

Targeted, Follow-Up Interviews and Site Visits

To further assess the impact of the course on participants, NCREL evaluators will conduct targeted, follow-up interviews and site visits with a sample of participants. The interviews and site visits will focus on how participants have applied what they learned in the course and how they have changed their professional practice. The evaluator also will look at changes in classroom and school practices and planning as well as the impact on student experiences and learning. The evaluators will also collect sample lesson plans and curriculum units for a document review.

Submission of Evaluation Information

To ensure that all evaluation data has been collected, please use the following checklist as a guide.

Instrument/Data Collection Technique	Completed
Online Course Participant Profile Form	
Online Participant Pre-Course Survey	
Online Participant Post-Course Survey	
Online End-of-Course Participant Evaluation Form	
Facilitator Journal	
Online Facilitator Course Evaluation Form	
Submitted Course Syllabi, Handouts, Additional Resources Used in Course	
Submitted Copies of Participant Lesson Plans	
Course Observation Form	**(NCREL completes)**
Semistructured, Targeted Course Interview Protocol	**(NCREL completes)**
Targeted, Follow-Up Interviews and Site Visits	**(NCREL completes)**

Please submit all evaluation data to NCREL. The contact person is:

Kim Good, Evaluation Associate
North Central Regional Educational Laboratory
1900 Spring Road, Suite 300
Oak Brook, IL 60523-1480
E-mail: kimp@ncrel.org

Course Evaluation Instruments

Instrument Name/Data Collection Technique	Purpose	Data Source/ Key Informants	Who Administers and Collects Instrument	When it is completed
Online Course Participant Profile Form http://ncrelsgi.ncrel.org/ncrel/courses/lwt/participant-profile.html	Collect data about the participants for possible follow-up at later point in time and to maintain a database of all participants	Course participants	Facilitator(s)	First Session
Online Participant Pre-Course Survey and Post-Course Survey (http://ncrelsgi.ncrel.org/ncrel/courses/lwt/pretest.htm or postest.htm) User Name: Course Password: learn	Assess participants' knowledge and usage of key course components prior to and following course	Course participants	Facilitator(s)	First Session/ Last session
Online End-of-Course Participant Evaluation Form (http://ncrelsgi.ncrel.org/ncrel/course/lwt/participant-evaluation.html)	Collect evaluation data from course participants regarding satisfaction with course and impact of course	Course participants	Facilitator(s)	Last session
Online Facilitator Course Evaluation Form and Journal (http://ncrelsgi.ncrel.org/ncrel/courses/lwt/facilitator-evaluation.html)	Document course roll-out and provide suggestions for refinements and improvements	Facilitator(s)	Facilitator(s) self-administer	Ongoing throughout course
Course Observation Form	Document course implementation, modifications, and adherence to course requirements	Course activities and documents	Evaluator	Throughout sessions
Semistructured, Targeted Course Interview Protocol	Gather feedback from course participants as to their reactions and learnings from the course	Course participants	Evaluator	Throughout sessions
Targeted Follow-up Interviews and Site Visits	Assess the impact of the course on participants and their professional practices	Course participants	Evaluator	6–12 months following course completion

Online Course Participant Profile Form

http://ncrelsgi.ncrel.org/ncrel/courses/lwt/participant-profile.html
User name: Course
Password: learn > case sensitive

Academy
Course Participant
Course Facilitator
Course Evaluator

Site of Course: _____ **Course Starting Date:** _____

Name _____
(First) (Last) (Title - Mr., Ms., Dr.)

1. Professional Role in Organization (Check all that apply.)

a. ❑ Teacher: grade level(s) ❑ K ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 ❑ 6 ❑ 7 ❑ 8 ❑ 9 ❑ 10 ❑ 11 ❑ 12

b. ❑ Curriculum specialist: area of specialty _____

c. ❑ Learning resource specialist/librarian

d. ❑ Technology specialist

e. ❑ Building-level administrator

f. ❑ District-level administrator

g. ❑ Intermediate service agency employee

h. ❑ Other (describe) _____

School/District Name: _____

School Address: _____

City: _____ **State:** _____ **Zip Code:** _____

School Phone Number: _____ **Fax Number:** _____

E-mail Address: _____

2. Are you participating in the *Learning With Technology* course for any of the following types of credit? *(Check all that apply and indicate the number of credit hours and the name of the institution through which credit is being granted.)*

a. ❑ Graduate Credit # of hours _____ Institution _____

b. ❑ Continuing Education Credit (CEU) # of hours _____ Institution _____

c. ❑ Recertification # of hours _____ Institution _____

d. ❑ In-district Staff Development # of hours _____ Institution _____

—Over—

Academy
Course Participant
Course Facilitator
Course Evaluator

Online Course Participant Profile Form (continued)

3. How did you hear about the course? *(Check **all** that apply.)*

a. ❑ Mail/flyer

b. ❑ Word of mouth from colleagues in same school or office

c. ❑ From school district administrator or staff member

d. ❑ From area or state administrators or consultant outside of my school district

e. ❑ Advertisements

f. ❑ Other (describe) _____

4. Why are you taking the course?

_____

_____

_____

_____

_____

5. How many contact hours of educational technology training have you received to date? (write 0 if none) _____

6. How many of these training hours focused *specifically* on concrete ways to integrate technology into the curriculum and to help students be active, engaged learners? _____

Online Participant Pre-Course Survey

http://ncrelsgi.ncrel.org/ncrel/courses/lwt/pretest.htm
User name: Course > case sensitive
Password: learn

Academy
Course Participant
Course Facilitator
Course Evaluator

Last Name _____ **First Name** _____

E-mail _____ **Facilitator Name** _____

Date _____ **Course Site** _____

Please rate how much you ***understand and use*** the principles and techniques described below as a part of your teaching (either as part of your lessons or in helping you prepare your lessons).

Your frank self-assessment at the beginning of the course will help facilitators plan what to emphasize throughout the course. Doing this again at the end of the course will show what you have learned. Your answers will be kept completely confidential; only group summaries will be reported in an evaluation of the course.

Read the following statements and check the box of the response that most closely matches your knowledge and use of the concept.

1. I understand and apply principles of engaged learning.

a. ❑ No understanding; do not use in my teaching

b. ❑ Some understanding; infrequently use in my teaching

c. ❑ Good understanding; frequently use in my teaching

d. ❑ Very good understanding; regularly use in my teaching

2. I am familiar with listservs and have used them to communicate with other educators to improve my teaching.

a. ❑ No familiarity; do not use in my teaching

b. ❑ Some familiarity; infrequently use in my teaching

c. ❑ Good familiarity; frequently use in my teaching

d. ❑ Very good familiarity; regularly use in my teaching

3. I know how to apply technology to increase the quality and effectiveness of learning in my classroom.

a. ❑ No understanding; do not use in my teaching

b. ❑ Some understanding; infrequently use in my teaching

c. ❑ Good understanding; frequently use in my teaching

d. ❑ Very good understanding; regularly use in my teaching

Online Participant Pre-Course Survey (continued)

4. I have designed lessons that integrate technology into instruction and learning.

a. ❑ No understanding; do not use in my teaching

b. ❑ Some understanding; infrequently use in my teaching

c. ❑ Good understanding; frequently use in my teaching

d. ❑ Very good understanding; regularly use in my teaching

5. I know how to develop a comprehensive planning framework that integrates technology and use such a framework to plan units and lessons.

a. ❑ No understanding; do not use in my teaching

b. ❑ Some understanding; infrequently use in my teaching

c. ❑ Good understanding; frequently use in my teaching

d. ❑ Very good understanding; regularly use in my teaching

6. I am familiar with the World Wide Web and integrate it into my instruction.

a. ❑ No familiarity; do not use in my teaching

b. ❑ Some familiarity; infrequently use in my teaching

c. ❑ Good familiarity; frequently use in my teaching

d. ❑ Very good familiarity; regularly use in my teaching

7. I am familiar with the Internet server *Pathways for School Improvement* and use it as a professional development resource.

a. ❑ No familiarity; do not use as a professional development resource

b. ❑ Some familiarity; infrequently use as a professional development resource

c. ❑ Good familiarity; frequently use as a professional development resource

d. ❑ Very good familiarity; regularly use as a professional development resource

Online Course Participant Pre-Course Survey (continued)

Academy
Course Participant
Course Facilitator
Course Evaluator

8. I have access to sample lessons that demonstrate effective use of technology in curriculum.

a. ❑ No access; do not use these types of sample lessons

b. ❑ Some access; infrequently use these types of sample lessons

c. ❑ Good access; frequently use these types of sample lessons

d. ❑ Very good access; regularly use these types of sample lessons

9. I have the opportunity to observe and learn from other teachers using technology in their curriculum.

a. ❑ No opportunity; do not observe and learn from other teachers

b. ❑ Some opportunity; infrequently observe and learn from other teachers

c. ❑ Good opportunity; frequently observe and learn from other teachers

d. ❑ Very good opportunity; regularly observe and learn from other teachers

Online Participant Post-Course Survey

http://ncrelsgi.ncrel.org/ncrel/courses/lwt/posttest.htm
User name: Course
Password: learn > case sensitive

Academy
Course Participant
Course Facilitator
Course Evaluator

Last Name _____ **First Name** _____

Date _____ **Course Site** _____

Please rate how much you ***understand and use*** the principles and techniques described below as a part of your teaching (either as part of your lessons or in helping you prepare your lessons).

Your frank self-assessment at the end of the course will show what you have learned. Your answers will be kept completely confidential; only group summaries will be reported in an evaluation of the course.

Read the following statements and check the box of the response that most closely matches your knowledge and use of the concept.

1. I understand and apply principles of engaged learning.

a. ❑ No understanding; do not use in my teaching

b. ❑ Some understanding; infrequently use in my teaching

c. ❑ Good understanding; frequently use in my teaching

d. ❑ Very good understanding; regularly use in my teaching

2. I am familiar with listservs and have used them to communicate with other educators to improve my teaching.

a. ❑ No familiarity; do not use in my teaching

b. ❑ Some familiarity; infrequently use in my teaching

c. ❑ Good familiarity; frequently use in my teaching

d. ❑ Very good familiarity; regularly use in my teaching

3. I know how to apply technology to increase the quality and effectiveness of learning in my classroom.

a. ❑ No understanding; do not use in my teaching

b. ❑ Some understanding; infrequently use in my teaching

c. ❑ Good understanding; frequently use in my teaching

d. ❑ Very good understanding; regularly use in my teaching

Online Participant Post-Course Survey (continued)

4. I have designed lessons that integrate technology into instruction and learning.

a. ❑ No understanding; do not use in my teaching

b. ❑ Some understanding; infrequently use in my teaching

c. ❑ Good understanding; frequently use in my teaching

d. ❑ Very good understanding; regularly use in my teaching

5. I know how to develop a comprehensive planning framework that integrates technology and use such a framework to plan units and lessons.

a. ❑ No understanding; do not use in my teaching

b. ❑ Some understanding; infrequently use in my teaching

c. ❑ Good understanding; frequently use in my teaching

d. ❑ Very good understanding; regularly use in my teaching

6. I am familiar with the World Wide Web and integrate it into my instruction.

a. ❑ No familiarity; do not use in my teaching

b. ❑ Some familiarity; infrequently use in my teaching

c. ❑ Good familiarity; frequently use in my teaching

d. ❑ Very good familiarity; regularly use in my teaching

7. I am familiar with the Internet server *Pathways for School Improvement* and use it as a professional development resource.

a. ❑ No familiarity; do not use as a professional development resource

b. ❑ Some familiarity; infrequently use as a professional development resource

c. ❑ Good familiarity; frequently use as a professional development resource

d. ❑ Very good familiarity; regularly use as a professional development resource

Online Participant
Post-Course Survey (continued)

Academy
Course Participant
Course Facilitator
Course Evaluator

8. I have access to sample lessons that demonstrate effective use of technology in curriculum.

a. ❑ No access; do not use these types of sample lessons

b. ❑ Some access; infrequently use these types of sample lessons

c. ❑ Good access; frequently use these types of sample lessons

d. ❑ Very good access; regularly use these types of sample lessons

9. I have the opportunity to observe and learn from other teachers using technology in their curriculum.

a. ❑ No opportunity; do not observe and learn from other teachers

b. ❑ Some opportunity; infrequently observe and learn from other teachers

c. ❑ Good opportunity; frequently observe and learn from other teachers

d. ❑ Very good opportunity; regularly observe and learn from other teachers

Online End-of-Course Participant Evaluation Form

Academy
Course Participant
Course Facilitator
Course Evaluator

http://ncrelsgi.ncrel.org/ncrel/courses/lwt/participant-evaluation.htm
User name: Course
Password: learn
> case sensitive

Site of Course: _____ **End Date of Course:** _____

Course Facilitator(s): _____

1 Professional Role *(check one)*

a. ❑ Elementary-level teacher (grades K–3)
b. ❑ Middle-level teacher (grades 4–8)
c. ❑ Secondary-level teacher (grades 9–12)
d. ❑ Administrator
e. ❑ Curriculum director
f. ❑ Technology specialist
g. ❑ Library/media specialist
h. ❑ Other (describe) _____

Please evaluate the effectiveness of the course and the facilitator in improving your knowledge and skills of integrating technology to promote engaged learning. Using a scale of 1 to 4 and the accompanying descriptors, circle the number that matches your assessment of the component.

1 = very poor, needs considerable improvement
2 = marginally acceptable
3 = good
4 = outstanding, superior, "right on target"

2. Course Design and Delivery	**1**	**2**	**3**	**4**
a. ❑ How the course was conducted (sequencing, pace)	❑	❑	❑	❑
b. ❑ Number of course sessions	❑	❑	❑	❑
c. ❑ Allocation of collaborative work time	❑	❑	❑	❑
d. ❑ Effectiveness of materials (handouts, simulation, videos, etc.)	❑	❑	❑	❑
e. ❑ Interaction between facilitators and participants	❑	❑	❑	❑
f. ❑ Interaction among participants	❑	❑	❑	❑
g. ❑ Outside session assignments	❑	❑	❑	❑
h. ❑ Computer availability for practice outside of class	❑	❑	❑	❑
i. ❑ Availability of technical support and assistance	❑	❑	❑	❑

3. Course Facilitators	**1**	**2**	**3**	**4**
a. ❑ Communication of information	❑	❑	❑	❑
b. ❑ Preparation and organization	❑	❑	❑	❑
c. ❑ Knowledge of material	❑	❑	❑	❑
d. ❑ Response to questions	❑	❑	❑	❑
e. ❑ Assistance provided	❑	❑	❑	❑

Academy
Course Participant
Course Facilitator
Course Evaluator

Online End-of-Course Participant Evaluation Form (continued)

4. Course Impact

Please respond to the following items relating to the impact the course has had on you, using a scale of 1 to 5. Use these descriptors as guidelines, and check the number that matches your assessment of that component.

1 = not at all **2 = only a little** **3 = somewhat** **4 = quite a bit** **5 = a tremendous amount**

As a result of this course, I know . . .	1	2	3	4	5
a. How to evaluate the effectiveness of a lesson or unit as to how well it promotes engaged, meaningful learning.	❑	❑	❑	❑	❑
b. How to evaluate the extent to which a lesson or unit both integrates technology and promotes engaged, worthwhile learning.	❑	❑	❑	❑	❑
c. How to plan worthwhile and engaging lessons and units that integrate technology effectively.	❑	❑	❑	❑	❑
d. How to implement worthwhile and engaging lessons and units that integrate technology effectively.	❑	❑	❑	❑	❑
e. How technology can promote engaged learning.	❑	❑	❑	❑	❑
f. What are poor uses of technology.	❑	❑	❑	❑	❑
g. The range of technologies and technology applications that I can use.	❑	❑	❑	❑	❑

5. Comments relative to the course

a. What were your expectations for the course? Were they met?

b. What two to three things from the course did you find most useful?

c. What about this course would you change or modify? In what ways?

d. In what ways do you intend to use what you have learned in your own classroom?

e. Was it worth your time and money to participate in the course? ❑ Yes ❑ No

Online Facilitator Course Evaluation Form

(To be completed by the course facilitator(s) at the end of the course.)

http://ncrelsgi.ncrel.org/ncrel/courses/lwt/facilitator-evaluation.htm
User name: Course
Password: learn > case sensitive

Academy
Course Participant
Course Facilitator
Course Evaluator

Site of Course: _____ **End Date of Course:** _____

Overview and Directions:

This instrument is to be completed by the *Learning With Technology* course facilitator. Please answer each questions in as much detail as possible. Your responses will remain confidential and be used to improve the course design. Your input is very much appreciated!

Name: _____

Fee Charged: _____

Total Revenue: _____

1. What was the design format of the course?

Number of sessions _____

Length of sessions (# of hours) _____

Time period for course (# of sessions per week or month) _____

2. Number of participants _____

3. Background of participants (e.g., fourth- to eighth-grade teachers) _____

4. Of the following *Learning With Technology* resources (including those in the Participant's Manual), *check which ones you used:*

a. ❑ Engaged Learning Essay
b. ❑ Print Scenarios
c. ❑ Videos
d. ❑ Planning Framework
e. ❑ Planning Tools
f. ❑ Sample Lesson Plans in Participant's Manual
g. ❑ Management Tips
h. ❑ Designing and Refining Lessons With Colleagues: Tips for Productive Work
i. ❑ Step-by-Step Guide to Finding and Using Internet Web sites
j. ❑ Step-by-Step Guide to the *Pathways to School Improvement* Internet Server
k. ❑ Step-by-Step Guide to Finding and Participating in Listservs
l. ❑ Guide for Evaluating Software
m. ❑ Technology Terms Glossary
n. ❑ References and Resources
o. ❑ Resource Center (Course Web Site)
p. ❑ Course Listserv
q. ❑ Other (describe) _____

Academy
Course Participant
Course Facilitator
Course Evaluator

Online Facilitator Course Evaluation Form (continued)

(To be completed by the course facilitator(s) at the end of the course.)

5. What additional resources did you use?

6. Of the following *Learning With Technology* activities, check which ones you used as a part of the course.

a. ❑ Engaged Learning (session 1)

b. ❑ World Wide Web exploration (session 1)

c. ❑ Making a Move (session 2)

d. ❑ Analysis of video examples using the Lesson Analysis Worksheet (session 3)

e. ❑ Analysis of print scenarios using the Lesson Analysis Worksheet (session 4)

f. ❑ Analysis of sample lessons (session 5)

g. ❑ Participant lesson planning time (sessions 4 and 5)

h. ❑ Participant sharing of lesson plans (session 6)

i. ❑ In-between-session homework (all sessions)

7. What, if any, changes did you make from the suggested implementation design as described in the Facilitator's Guide?

8. If you modified the suggested implementation, why did you make those changes?

9. What were the strengths of the course?

10. What were the weaknesses of the course?

11. What suggestions do you have to improve the course design and delivery?

Course Observation Form

(To be completed by the NCREL evaluator.)

Academy
Course Participant
Course Facilitator
Course Evaluator

Site of Course: _____ **Date of Course:** _____

Session number: _____

Course Facilitator: _____ **Course Evaluator:** _____

Instructions to the observer

The focus of the observation of the *Learning With Technology* course is to determine to what extent it was implemented as it was designed and to document modifications of that design.

During the observation, provide running notes related to each key component, taking care to address every component. Provide a numerical judgment of each of the components using the Likert scale provided for each. Write in the number that describes the *extent* to which the component is present. (Your running observation notes should provide the descriptive evidence to back up the Likert scale rating.) Since not all of the components apply to every session, we have noted applicable sessions in parenthesis.

Using the notes you have taken on this form as a guide, type up a set of field notes for each session observed. The narrative should provide a detailed description of what occurred, indicating the changes made in the intended course implementation and what difference the changes made in the fidelity of the implementation. Participants' and facilitators' interactions and reactions should also be described.

Key components for observation

1. Degree of emphasis placed on three overarching questions (Sessions 1-6)

a. In what ways does this lesson/unit promote worthwhile learning?

b. In what ways does this lesson/unit promote engaged learning?

c. How does technology enhance and extend this lesson/unit in ways that would not be possible without it?

0 = nonexistent

1 = marginally acceptable

2 = moderately well

3 = outstanding

_____ Likert Rating

Comments:

Academy
Course Participant
Course Facilitator
Course Evaluator

Course Observation Form (continued)

(To be completed by the NCREL evaluator.)

2. Facilitator's description of engaged learning (Does it match NCREL's definition of engaged learning? Do the participants understand the concept of engaged learning?) (Session 1)

0 = nonexistent

1 = marginally acceptable

2 = moderately well

3 = outstanding

_____ Likert Rating

Comments:

3. Use of the Planning Framework Structure (Sessions 4–6)

0 = nonexistent

1 = marginally acceptable

2 = moderately well

3 = outstanding

_____ Likert Rating

Comments:

4. Access to and use of computer (hands-on capabilities at site; it is recommended there be at least one computer to every two participants) (Sessions 1–2)

0 = nonexistent

1 = marginally acceptable

2 = moderately well

3 = outstanding

_____ Likert Rating

Comments:

Course Observation Form (continued)

(To be completed by the NCREL evaluator.)

Academy
Course Participant
Course Facilitator
Course Evaluator

5. Explicit statement and emphasis of course goals and session objectives and explanation of the "whys" behind them (Sessions 1–6)

0 = nonexistent

1 = marginally acceptable

2 = moderately well

3 = outstanding

_____ Likert Rating

Comments:

6. Effective use of the videos (focusing on three guiding questions of the course) (Session 3)

0 = nonexistent

1 = marginally acceptable

2 = moderately well

3 = outstanding

_____ Likert Rating

Comments:

7. Participant analysis of more than one video (one as a group and one independently) (Session 3)

Comments:

Academy
Course Participant
Course Facilitator
Course Evaluator

Course Observation Form (continued)

(To be completed by the NCREL evaluator.)

8. Selection and use of print scenarios for comparing and contrasting in terms of the three guiding questions of the course (Session 4)

0 = nonexistent

1 = marginally acceptable

2 = moderately well

3 = outstanding

_____ Likert Rating

Comments:

9. Selection and use of two sample lesson plans for comparing and contrasting in terms of the three guiding questions of the course (Session 5)

0 = nonexistent

1 = marginally acceptable

2 = moderately well

3 = outstanding

_____ Likert Rating

Comments:

10. Facilitators stress the value of in-between-sessions homework assignments (e.g., highlight and explain assignments) (Sessions 1–6)

0 = nonexistent

1 = marginally acceptable

2 = moderately well

3 = outstanding

_____ Likert Rating

Comments:

Course Observation Form (continued)

(To be completed by the NCREL evaluator.)

Academy
Course Participant
Course Facilitator
Course Evaluator

11. Facilitators encourage use of a critical friend and stress the value of working together (Sessions 3–6)

0 = nonexistent

1 = marginally acceptable

2 = moderately well

3 = outstanding

_____ Likert Rating

Comments:

12. Facilitators informed participants about and encouraged their use of the listserv and course Web site (Session 1)

0 = nonexistent

1 = marginally acceptable

2 = moderately well

3 = outstanding

_____ Likert Rating

Comments:

13. Participants spend time sharing with each other (Sessions 1–6)

0 = nonexistent

1 = marginally acceptable

2 = moderately well

3 = outstanding

_____ Likert Rating

Comments:

Academy
Course Participant
Course Facilitator
Course Evaluator

Course Observation Form (continued)

(To be completed by the NCREL evaluator.)

14. Time allotment of course (note how the course is offered, i.e., in terms of the 12 hours of contact time)

Is the course offered in the two-hour blocks for six sessions preferably with a week between sessions?

Is the course 12 contact hours?

Describe the changes (if any) from the above two aspects

Comments:

15. Approved adaptations (In the event the course design was adapted intentionally with NCREL approval before the course is given, observe and note whether the course facilitator is adhering to that adaptation.)

Comments:

16. Participants

Number of participants _____

Background of participants (Are they all teachers? What grade levels do they teach?)

Comments:

17. Other Comments

Semistructured Targeted Course Interview Protocol

(For NCREL use with select course participants.)

Academy
Course Participant
Course Facilitator
Course Evaluator

Site of Course: _____ **Date of Course:** _____

Course Facilitator: _____ **Course Evaluator:** _____

Instructions to the Interviewer

The following questions are intended to be asked of a selected sample of participants during the *Learning With Technology* course. Please ask for and provide as much detail as possible and probe when necessary. The purpose of the questions is to gather feedback regarding the participants' reactions to the course, what they have learned, and how they intend to apply their new knowledge and skills.

Key Questions:

1. **What did you think of today's session?**

2. **What, if anything, about this session would you change or modify in order to improve the course? In what ways?**

3. **What two to three new things did you learn?**

4. **From what you learned, what did you find most useful?**

5. **In what ways do you intend to use what you have learned back in your own classroom or school?**

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LEARNING WITH TECHNOLOGY

Participant's Manual

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Jeri Nowakowski, Executive Director

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Overview

Learning With Technology

Computers, CD-ROMs, online communication, the Internet. Most of us would agree that new technologies provide powerful tools for learning, communicating, and collaborating. What is less obvious, and often overwhelming, is how we, as teachers, go about integrating these new technologies into classroom instruction in meaningful ways.

Course Goal

The goal of this course is to help teachers develop effective, technology-supported instructional activities that enhance student learning and achievement. Central to the course and its goal is a vision of learning we call "engaged learning."

Engaged learners:

- Take an active role in meaningful tasks and activities.
- Assume increasing responsibility for their own learning and demonstrate their understanding.
- Explore a variety of resources and strive for deep understanding through experiences that directly apply to their lives, promote curiosity and inquiry, and stimulate new interests.

Guiding Questions

Because the concept is so fundamental, we begin *Learning With Technology* by exploring engaged learning. Three questions are central to all course activities:

1) In what ways does this lesson promote worthwhile and meaningful learning?

2) In what ways does this lesson promote engaged learning?

3) How does technology enhance and extend this lesson in ways that would not be possible without it?

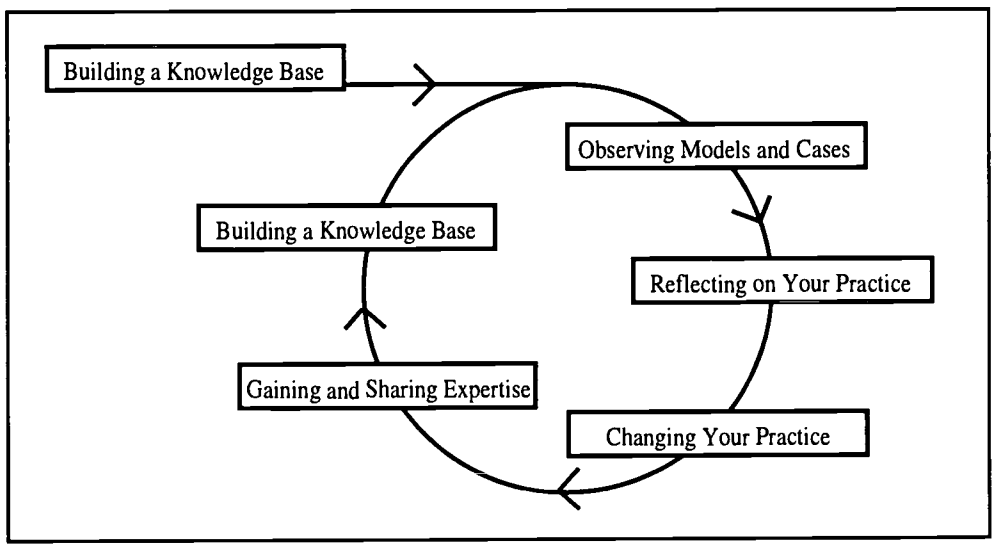
Scope and Sequence

Our work together will include:

- Exploring the concept of engaged learning and the role of technology.
- Using a planning framework to analyze and design technology-supported lessons that engage students.
- Analyzing video, print, and online instructional examples.
- Exploring the instructional resources available on the Internet and the World Wide Web.
- Reflecting on current instruction.
- Refining existing lessons.
- Designing new lessons and units.
- Sharing ideas and providing collegial feedback.
- Collecting a portfolio of lesson ideas.
- Celebrating our successes!

Session Design

The design of the *Learning With Technology* course is based on a model developed by the North Central Regional Educational Laboratory[1] (NCREL). It is based on research on adult learning and professional development. Professional growth is conceptualized as five dimensions that are developmental and cyclical.



Building a Knowledge Base

Acquire new knowledge, information, and skills.

Observing Models and Cases

Study instructional examples in order to develop a practical understanding of the research.

Reflecting on Your Practice

Analyze your instructional practice on the basis of new knowledge.

Changing Your Practice

Turn your theoretical and practical knowledge into plans for instructional change. Try out the plans and revise them if necessary.

Gaining and Sharing Expertise

Refine your instructional practice while sharing your practical wisdom with colleagues.

[1] Adapted from the North Central Regional Educational Laboratory's *Strategic Teaching and Reading Project.*

Session-by-Session Synopses

Session 1

- Discuss course goals.
- Explore the concept of engaged learning.
- Learn about the World Wide Web (WWW) as an instructional resource.

Session 2

- Use the World Wide Web as a learning activity.

Session 3

- Analyze video examples of instruction.

Session 4

- Analyze "Print Scenarios."
- Refine a lesson.

Session 5

- Analyze a "Sample Lesson."
- Design (or refine) an instructional activity using the "Planning Framework."
- Discuss the activity with a critical friend.

Session 6

- Share lesson designs.
- Adapt lesson ideas to other grade levels and content areas.
- Create a portfolio of lesson ideas.
- Reexamine individual and collective goals and discuss strategies for continued collaboration and learning.
- Celebrate successes!

Engaged Learning

Engaged Learning

by Margaret B. Tinzmann, Claudette Rasmussen,
Mary Foertsch, Mary McNabb, Gilbert Valdez, and Ann Holum

This essay provides a brief explanation of engaged learning. Since engaged learning is such an important concept in the Learning With Technology *course, you should read the essay* before *you begin the course. It is helpful if, as you read, you consider how engaged learning plays out in your own classroom. It is also helpful to discuss the ideas in the essay with your colleagues, both those taking the course and others you work with daily.*

Research indicates that achieving engaged learning depends on what students do, what teachers do, learning tasks students perform, and the assessment associated with those tasks. When these areas have certain characteristics, or indicators, they promote engaged learning. These indicators, listed here, are described in detail below.

- Students who are explorers, teachers, cognitive apprentices, producers of knowledge, and self-directors and managers of their own learning
- Teachers who act as facilitators, guides, and co-learners; who seek professional growth; and who design curriculum and their own research
- Learning tasks that are authentic, challenging, and multidisciplinary
- Assessment that is authentic, based on performance, seamless and ongoing, and generates new learning

Student Roles

Students are explorers, teachers, cognitive apprentices, producers of knowledge, and self-directors and managers of their own learning.

The essence of *exploring* is collecting information and reflecting upon its meaning. Students discover concepts and connections and apply skills by interacting with the physical world, materials at hand, technology, and other people. Exploring can be purposeful, as when students decide ahead of time what kind of information they seek, or open-ended, as when students browse in a library, on a CD-ROM, or on Internet web sites. Students browse, search, and obtain information from numerous sources—with technology, these sources can be from anywhere in the world.

With the wealth of information available today students need to manipulate and organize information into some logical form that suits their learning goals and the tasks in which they are engaged. This may involve summarizing or transforming and converting information to new forms, for example, from text to nontext and vice versa. Students may perform analysis as complex as statistics or as straightforward as comparing one set of data to another on obvious but key qualitative characteristics. They make connections to what they already know; look for inconsistencies to reach conclusions; make decisions; solve problems; plan and execute experiments; judge the value of information; and decide what concepts, ideas, strategies, and skills are worth retaining. Developing and using one's aesthetic sense and abilities is also a facet of exploration.

Reflecting is a major function of exploration. (Indeed, it could be argued that reflecting is a major indicator of engaged learning, since it applies to all the student roles.) Without opportunities for reflection, students would explore with little consideration of the value of what they find. With teacher guidance, reflection encourages a thoughtful approach to tasks, however small or large they may be, including planning and management of information.

Students often assume the role of *cognitive apprentice*. In this role they observe, apply, and refine through practice the thinking processes practitioners and experts use. They reflect on what they are learning and doing and generalize their skills and transfer their learning to new situations.

A part of the cognitive apprentice's role is to observe models, imitate, and practice. Students observe adults and more capable peers performing a skill that they may then imitate and practice. This is most obvious in sports where observation, imitation, and practice are common. But such behaviors occur in all subject matter areas. Reading with expression, treating books with respect, asking useful questions, participating appropriately in discussions, participating in a cooperative learning group—these, and many more behaviors, are partly learned through observation, imitation, and practice. Cooperative and collaborative learning are more common in today's classroom. Such contexts for learning permit greater opportunities for students to observe a range of expertise that seldom resides in just one person, that is, the teacher.

Students who are engaged in their own learning often assume the role of *teacher*. In this role, students summarize what they have learned and represent it in order to communicate it to others. Teaching includes informing, problem solving, persuading, and advising. Students may explain concepts and skills, give examples, compare and contrast information, make generalizations, or present arguments. Teaching may be formal—as when students conduct a presentation or offer a museum exhibit to their classmates—or more informal—as when they work with other students in cooperative groups. At these times, students may teach their peers something they know quite well.

When students are *producers,* they generate products for themselves and others. But these products can take many forms—not only reports, projects, experiments, and displays of an academic nature, but also creative products such as original art, music, dance, theatrical works (live, film, or video). Products may also be translations and creative or informative writing. Students may perform works created by others—musical productions, drama and other theatrical works, reading of literary works, or dance. They may demonstrate special abilities and accomplishments in group and individual sports. Products usually require an audience of some sort. Traditionally, the audience has been the teacher and sometimes one's classmates. With computer technology, potentially, students' products can be presented to the whole world. This also means, of course, that the whole world can respond as an authentic audience, one that may offer negative criticism as well as praise. Such a possibility ought to encourage students to approach their work more critically and thoughtfully and some research indicates that this does indeed happen.

Finally, as *self-directors and managers,* students take charge of their own learning—they are self-regulated. Taking charge means defining one's own learning goals, making predictions, asking questions, identifying problems that are interesting and meaningful to oneself, and making and implementing plans. An important aspect of self-direction for students is an understanding of themselves and the way they learn, their strengths and weaknesses. Some educators refer to this aspect of directing and managing as metacognition, or thinking about one's own thinking. Students with good metacognitive skills have a repertoire of learning and thinking strategies and know how and when to use them. They know how to redirect themselves when these strategies do not work. Furthermore, they constantly work to add new strategies to their repertoire. Self-regulation involves revising plans when they are not working and changing tasks and redefining products as needed. Students also decide when it is useful to work independently and when it is advantageous to work with other students, understanding what they and others can contribute to learning tasks and projects.

Reflection is an important component of self-direction and management, just as it is in other engaged learning processes. Reflection includes thinking about what one is learning and doing and asking questions based on those reflections in order to maximize and improve one's learning.

Self-direction and management include a strong evaluative function. Students evaluate themselves and others and seek evaluation from others as ways to check how they are doing and to improve their own learning. Students need to assess themselves for the extent to which they have achieved their own goals, answered their own questions, and solved the problems they have found worthwhile to work on. They also make judgments about materials and resources they use. Engaged students also must assume responsibility for

evaluating the learning tasks they select or devise themselves as well as those suggested by others, including teachers. Similarly, it is entirely appropriate for students to assess learning lessons, again, both those they select and those imposed by others. Evaluation should focus on how well learning activities, lessons, and resources support one's goals.

One final note. Throughout this section *reflection* has been repeatedly mentioned as an important facet of each student role. It might even be considered itself an indicator of engaged learning. Constructing meaning is not enough; engaged learners also think about the meaning they are constructing, how this meaning fits with what they know, if there are contradictions between sources of evidence, theories, various opinions, and so on. Reflection can lead to deep understanding and the formation of new connections among the kinds of knowledge one has.

Teacher Roles

Teachers act as facilitators, guides, and co-learners who seek professional growth and who design curriculum and their own research.

Just as student roles need to be recast in an engaged learning model of teaching and learning, so too must teacher roles. The teacher's relationship to the students is different from that of being the sole expert. In an engaged learning environment, the teacher recognizes the importance of encouraging students to specialize in areas that are widely diverse and for which they might themselves become the expert. In an engaging classroom, the teacher acts as a *facilitator, guide,* and *co-learner/co-investigator.*

The teacher's role in relation to the student has long held the spotlight in the literature on reforming professional development. But equally important for the teacher is a new role in relation to the researcher. Increasingly the teacher is being called upon and invited to participate with researchers to collaboratively investigate new possibilities for effective teaching and learning. As *co-developers* with researchers, the teacher acts as a *collaborator, curriculum designer,* and *researcher.*

More and more we have come to recognize that a teacher's principal function is to foster students' engagement in challenging, self-directed work in the various student roles described above. In other words, teachers facilitate learning rather than dispense knowledge.

As a *facilitator,* a teacher creates an environment in which students solve problems, do authentic tasks, and collaborate. He or she determines when learning is best suited to indi-

vidual, small group, or whole class work; organizes learning groups; identifies areas of inquiry; selects and designs learning activities; arranges for access to human, material, and technological resources; and provides tools for students to store, manipulate, and analyze information and ideas.

When students begin their inquiry, teachers become *guides* rather than directors. Guidance involves mediation, modeling, and coaching. Teachers mediate by adjusting the level of information and support according to students' needs and by helping them link new information to prior knowledge, refine their problem-solving strategies, and learn how to learn. Modeling involves thinking aloud and demonstrating. Coaching involves giving hints or cues, providing feedback, refocusing students' efforts, assisting them in using a strategy, and providing factual and procedural knowledge. Central to being a guide are good listening, Socratic questioning, and providing help only when needed so that students come to manage their own learning.

Another important role is that of *co-learner* or *co-investigator.* Teachers find themselves in this role more often when they begin to incorporate technology into teaching because students often know more about hardware and software and have more technological skills than do their teachers and other adults.

Teachers also engage in different roles with each other in order to initiate and sustain curricular and educational reform. The reform process is typically long, requiring extensive professional growth with teachers in the role of *inquirer.* This is especially apparent in the push to integrate technology in support of learning into the schools.

Other roles are *co-developer* of meaningful practices and products; *collaborator* with other teachers and educators; *researcher* of questions of practical interest to themselves; and *curriculum designer,* which involves integrating meaningful content, instruction, and assessment and wise use of resources.

Authentic Tasks and Assessment

Learning tasks and the assessments associated with them foster divergent thinking, self-directed exploration, and open-ended, multidisciplinary projects. Students need opportunities to reflect, make decisions, solve problems, research and evaluate information, engage in creative and critical thinking, communicate effectively both orally and in writing, read critically (and for pleasure), and collaborate skillfully. Schools need to foster attitudes that promote lifelong learning and metacognitive skills.

Tasks that promote such learning can be characterized as *authentic, challenging*, and often *multidisciplinary*. Assessment should be *seamless and ongoing* and so integral to learning that it becomes difficult to distinguish a learning task from an assessment task. Assessment also should be based on actual *performance*, since in the real world assessment and performance are not separated. Assessment should also be *generative*, that is, it should encourage—generate—new learning.

Learning tasks are authentic, challenging, and multidisciplinary.

Tasks are *authentic* when they are important and interesting to learners and similar to what practitioners actually do. In authentic tasks, students use their knowledge of subject matter and practice basic and advanced skills together in much the same way that practitioners use such knowledge and skills. Authentic tasks take more time than typical school tasks; they tend to be complex projects and problems like tasks in the home and workplaces of today. Students build on their life experiences and engage in sustained, in-depth work, frequently collaborating with peers and mentors within the school as well as with people in the world outside. Such tasks benefit from authentic audiences—individuals or groups who are genuinely interested in or have a stake in attending to what students have done.

Learning tasks need to be relevant to students and consistent with their abilities, but it is critical that their content address school district, state, and/or national standards. Indeed, clear connections of tasks to standards and benchmarks help ensure that what students learn is worthwhile. Without teachers' thoughtful attention to content, one could imagine students highly engaged in learning content that is unimportant or trivial or so involved in the process of learning that they themselves lose sight of the content goals. The connections between standards and benchmarks should be explicit in lesson and unit plans and in curricular plans for a grade level or across a year of instruction. The specific content through which standards are achieved can—and should vary within classrooms. For example, one standard for reading literature in grades 6–8 (listed in Kendall, J. S., & Marzano, R. J., *Content Knowledge,* Aurora, CO: Mid-continent Regional Educational Laboratory, 1996) is "Identifies specific questions of personal importance and seeks to answer them through literature." A student could achieve this standard by reading any one or more of a variety of novels and short stories or by viewing films or videos. The key point is to be able to connect what content students deal with in learning tasks to the important standards they need to accomplish.

Authentic learning tasks tend to be *challenging,* meaning that they require students to stretch their thinking and often their social skills in order to be successful. Challenging tasks need not be drudgery. In some classrooms, students are expected to be drilled or drill

themselves on many aspects of the curriculum, not just multiplication facts (a favorite example today of the "need" to drill and practice), but also dates of historical events, the chemistry periodic table, poems, capitals of states, and other bits of content quite unrelated to what real mathematicians, historians, literature experts, and geographers do. Clearly, the "challenge" in this kind of routine work is to maintain motivation and to convince oneself that such rote learning and drill will eventually pay off.

Tasks in an engaged learning classroom are challenging in much different ways. In complex projects requiring months of work, students usually are responsible for planning and creating their own tasks and activities. The end result or goal is not provided solely by the teacher, but may be determined by one student, a group of students, or students working with the teacher. Furthermore, goals frequently change as projects go through early—and even later—development phases. As one learns more about a topic, theme, or problem, new, more interesting, and often more appropriate and better defined goals take the place of initial goals. And when goals change, activities also may change.

Tasks are also challenging because the information needed to perform them is seldom provided neatly in one or even several sources. Students cannot just expect to open their textbook to an assigned chapter and find the information they need. Open-ended questions and problems are interesting precisely *because* a neatly ordered collection of information is not available.

In some classrooms, working with others is, at best, frowned on and, at worst, labeled as cheating. Now that collaboration is seen as beneficial to learning, it presents challenges such as getting along with peers, sharing work fairly, setting mutual goals, and recognizing and using individuals' talents and abilities and honoring diversity, focusing on the work to be done rather than personal characteristics.

Learning tasks usually involve and benefit from *multidisciplinary* work. For example, thematic or problem-based projects generally blend several disciplines. Indeed, learning in the real world is seldom separated into subject matter disciplines to the extent that we have done so in schools. While students benefit from tasks that require them to think and act the way experts in science, history, and other subject matter areas do in order to learn the essence of what it means to be a scientist or an historian (or other practitioner), real-world applications in these content areas are seldom limited to sharp demarcations among academic disciplines. For example, real scientists must also be expert communicators, both as speakers, teachers, and writers. They must understand and use mathematical concepts. Often, they must understand the political and social implications of their work. Thus, many disciplines are integral to doing science; the same applies as well as to other domains of human endeavor.

Assessment is authentic, based on performance, generates new learning, and is seamless and ongoing.

Educational assessment has been defined as determining whether students have attained curricular goals. It has traditionally focused on the recall of discrete facts with applications taking place in extremely limited contexts, such as those offered by standardized tests. Critics of this approach to assessment have pointed out that measures such as standardized achievement tests are poorly matched to the goals of innovative educational programs. Related criticisms include the narrowness of test content that concentrates principally on basic skills; the mismatch between test content and curriculum and instruction; the over-emphasis on routine and discrete skills to the neglect of complex thinking and problem solving; and the limited relevance of multiple-choice formats to either classroom or real-world learning. Standardized assessment methods are inadequate for measuring some important indicators of engaged learning. That is not to say all standardized testing is out and alternative assessment is in. Rather, engaged learning calls for the use of alternative assessment measures to:

- Develop the learner's strategies for self-monitoring of progress.
- Foster the learner's ability for higher-order thinking skills.
- Measure progress against the learner's own development, not the norm.
- Provide more accurate evidence of a learner's abilities than traditional tests.

Alternative assessment results along with standardized test results provide a rich perspective about an individual's actual performance and learning capacities.

Many different terms have been used to describe alternatives to traditional multiple-choice testing. These include *authentic* assessment, *performance* assessment, and *portfolio* assessment. All of these terms refer to different types of alternative assessments that require students to generate rather than select a response. For example, performance assessment requires students to perform a complex task that uses relevant knowledge and skills. Authentic assessment involves realistic tasks in real-life environments. Portfolio assessment involves multiple measures of student performance taken over time. Other popular applications carry such labels as exhibitions, demonstrations, and student work samples.

Regardless of what we call these alternatives to traditional testing, the belief is that they capture significant educational outcomes better than traditional measures. Alternative assessment strategies share the following characteristics:

- Require students to produce or create something
- Tap higher-level thinking and problem-solving skills
- Use tasks that represent meaningful instructional activities
- Involve real-world applications
- Require new instructional and assessment roles for teachers and students

Alternative assessments focus on the importance of examining the processes as well as the products of learning. They challenge students to explore new possibilities, consider a variety of solutions to complex, open-ended problems, and draw their own conclusions. They also encourage teachers to ensure alignment between instructional goals and student learning experiences, and to gather the information necessary to guide their instructional decision-making.

Meaningful learning and task performance are informed by ongoing assessments of how students are doing and involve students themselves in the assessment process. An important part of helping students manage and direct their own learning is to provide them with opportunities to reflect on and evaluate their own work, set goals, and plan changes.

Within these multidisciplinary, problem-based units, the role of assessment is both formative and summative. Such assessment provides information about how much was learned in any particular unit of instruction, while providing real-time information to students and teachers about student progress. Assessment tasks are similar to those students might encounter in the real world. Students solve problems, make decisions, construct arguments, plan, and evaluate. In this way, they model the process of a professional discipline while acquiring knowledge in that discipline.

A Final Word

Engaged learning has been a reality in many classrooms and other learning contexts for centuries, long before the recent explosion of electronic technologies. However, technology does offer some rich opportunities to enhance learning and assessment and to promote new student and teacher roles. It can support and promote engaged and worthwhile learning, communication, and collaboration. Computer technologies especially offer greatly

increased opportunities for students to learn. Students who have access to these technologies can explore and find information from sources around the world. No longer is information solely controlled by or confined to the teacher or the textbook. Information gained through computer technologies also tends to be more current and, in fact, it changes rapidly as new discoveries are made or as important events take place. These technologies also afford the student opportunities to learn at any time and in any place.

Not only can students explore information via the Internet, listservs, CD-ROMs, and other sources, but they also can much more easily participate in the world of knowledge making than ever before. Students can converse quite easily with experts in many fields, seek information from other students or adults from around the world, and in turn offer their data, writings, and other products to the world. While it has always been important for students to learn how to select, reflect upon, manipulate, organize, and evaluate information, it is even more so now. Without these finely tuned skills, the bombardment of information would be confusing, misleading, and overwhelming.

At the very least, with technology so prevalent in all aspects of our lives, including in our jobs, students need all the opportunities they can get for becoming facile with this remarkable tool. Every day new uses of technology appear. Uses that today seem routine would have caused disbelief only a few years ago. Unfortunately, schools seem behind in their adoption of this tool. Clearly, we are failing our students if we do not use it. But while everyday uses are important for students to understand, and while they need facility with technology in order to succeed in their future careers, their greatest opportunity is now, in school where they can pursue, along with their teachers, the highest educational standards possible.

Planning Framework

Planning Framework

The purpose of the "Planning Framework" and the tools that support it is to help you plan lessons and units and select technologies to enhance those lessons and units. Technology, and any other resources students use, should promote engaged and worthwhile learning and improved student performance. Our premise is that new or extended technologies (for example, computers, e-mail, and the Internet), or any technology, should be used only if it enhances what you are doing. Familiar technologies (for example, books, paper and pencil, videos), should not be left out of your plans merely for the sake of using something new. Furthermore, new technologies on their own do not enhance a lesson; only with thoughtful use can they be used to their full potential.

Planning Framework

The "Planning Framework" contains the essential elements of any lesson plan whether it be a one-hour lesson or a year-long or multiyear plan created by a team of educators. (In fact, we intend the term "lesson" to refer to any cohesive segment of instruction of whatever length.) The Framework has both a short and long version. The long version contains guiding questions for most of the components. As an experienced teacher you may not feel you need to use the long form. However, we recommend using it during this course as you learn how to integrate new technologies into your instruction.

Planning Tools

The "Planning Tools" (located near the back of this manual) are optional, but we recommend using them, especially during the course and afterwards whenever you need a refresher. The tools include the following:

Learning Actions. These are processes or behaviors all learners engage in across learning situations. We list them so that you can plan your lessons to support the kinds of actions you and your students consider important for the lesson goals and topics and content. You will probably note that in many cases the actions overlap, and you may not agree with some of our labels. However, it is important not to become entangled in definitions or attempts to draw fine distinctions among the actions. Rather, use this list as a reminder of the types of learning actions that promote engaged and worthwhile learning.

Learning Actions-Engaged Learning Chart. This chart shows relationships between four categories of learning actions and indicators of engaged learning. The tool can be used in at least two ways. First, it can help you plan lessons that promote the highest engaged learning possible. Second, it is a way to evaluate how well existing lessons promote engaged learning. We also provide one example of students' use of technology that also can promote engaged learning.

Examples of Technologies Use. This tool provides examples of both familiar and new or extended technologies for each learning action shown in the first column. The first column also contains engaged learning questions for each action. (Thus, this chart overlaps somewhat with the Learning Actions-Engaged Learning chart although it is organized differently.) Familiar technology includes tools such as books, magazines, lab equipment, calculators, videos, and transparencies; new and extended technology includes such things as the Internet, e-mail, and digital cameras. After you become more familiar with some of the new technologies you will probably not need to refer to the chart and examples so often. Or, you may want to add some of your own examples. Keep in mind that our examples by no means are an exhaustive list of the ways to use either familiar or new and extended technology.

Note that many technologies can be used to enhance more than one learning action. This suggests their versatility in serving many purposes. Note also that any of the technologies can be misused or used inappropriately. For example, students can easily copy (through cut and paste functions on software programs) information they find on the Internet for their reports just as they used to copy information directly from an encyclopedia. These two cautions emphasize that your role as teacher is still far more important than the tools students use.

Technology Checklist. This resource is included to help you identify and keep track of technology that is available in your school. As your school obtains more new technology, you can check it off on the list so that you always know what your school has. The list will also serve as a reminder of what is available to you.

Advantages and Disadvantages of Different Technologies. The purpose of the last resource (divided into two charts) is also to help you choose appropriate technologies. It identifies some key advantages and disadvantages; you might add your own ideas as you try new technologies or even as you use familiar technology and materials.

Planning Framework (short form)

Title:

Subject Matter Emphasis and Level:

Brief Description of the Lesson:

Goals:

Content:

Prior Learning, Interests, Misconceptions, and Conceptual Difficulties:

Major Learning Activities:

Materials and Resources:

Books and Other Familiar Resources:

Community Resources:

Technology Resources:

Assessment:

Management:

Support Services and Special Teacher Notes:

Planning Framework (long form)

Title:

Subject Matter Emphasis and Level:

Brief Description of the Lesson/Unit:

Goals: Why are you teaching this lesson or unit? What are its goals? What school, district, and/or state standards/benchmarks and outcomes are addressed? What new knowledge, skills, habits of mind, and attitudes do you expect students to gain?

Content: What important content will you teach in this lesson or unit? Will you present the content as a problem, theme, issue, or topic? What role will students play in selecting content? In what ways will this content promote worthwhile and engaged learning?

Prior Learning, Interests, Misconceptions, and Conceptual Difficulties: What student needs, interests, and prior learning are a foundation for this lesson or unit? What conceptual difficulties might students have? How will the lesson or unit address these?

Planning Framework (long form continued)

Major Learning Activities: What worthwhile and engaging learning activities and tasks do you plan? What learning actions will they address? How will you use community and technological resources effectively to enhance students' learning?

Materials and Resources:

Books and Other Familiar Resources:

Community Resources:

Technology Resources:

Planning Framework (long form continued)

Assessment: What procedures will you use? How will you build them into the lesson? How will you guide students to assess themselves? How can technology enhance assessment?

Management: How will you manage students working in cooperative or collaborative groups? with partners? independently? How will you arrange the classroom physically? Where will students work? in the classroom, in the resource center, in a computer lab, or other location (e.g., at a museum)? How will you deal with students who need extra help? How will you help students who have special needs?

Support Services and Special Teacher Notes: What help will you need with computer hardware or with software, listservs, e-mail, the Internet, or other technology applications? What other help will you need, such as a special education teacher to advise or assist you with special students? What professional development opportunities would you like?

Print Scenarios

Conversaciòn en Español

Mr. Price sat at his desk, looking absently out the window. He was thinking about his eighth-grade Spanish class, wondering how he could incorporate more conversation into everyday activities. His students have taken Spanish since sixth grade, and, although they weren't fluent conversationalists, he wanted to encourage as much talking as he could in class. He liked one technique where the students would put themselves into the context of slides he would show in class depicting Spanish architecture, Mexican people, fiestas, the countryside, and vacation spots.

But Mr. Price wanted to add a little variety to what happened in the classroom. The students enjoyed going to the listening centers to hear authentic speech and native music on audiocassettes, but they couldn't talk with anyone. Mr. Price needed something else.

That evening, as Mr. Price flipped through the television channels, a talk show program on the Spanish channel caught his attention. Ordinarily, he didn't listen to talk shows, even in English, but this program was about dating. Three sets of mothers and daughters were sitting on stage, arguing about whether the daughter should be allowed to go out with boys who were reputed gang members. One daughter was absolutely glaring at her mother. The popular hostess, Cristina, a woman with the charismatic appeal of Oprah, was listening and nodding and occasionally interjecting a question or comment. After one particularly emotional outburst from a mother, the moderator broke for a commercial, saying in Spanish, "We'll be right back with more on 'The Dating Game: Whose Rules?' after these announcements!"

Mr. Price quickly got out a videotape. This would be a great way to get his students involved in conversation! They could watch a ten-minute segment of the guests interacting and then they could take on the roles of mother or daughter (or parent and teenager) and discuss various issues about dating. Then members of the "audience" could ask the panel questions or make comments, just as they do in these shows. This activity would include more than just the two students he currently engaged in conversation during the slide shows. And this particular topic could lead to a more serious discussion of cultural mores, gender expectations, and generational misunderstandings. Why hadn't he thought of this before!

Mr. Price mentally pictured his class. They would be happy to be able to rely on some familiar phrases like "We'll be right back after this commercial break." They could discuss beforehand what some of the probable vocabulary for this topic would be, and they could prepare cue cards to post around the room for visual support. The class could listen carefully to the segment and add to this list if necessary. Mr. Price could predict who would be the first to volunteer to be the traditional mother and the rebellious daughter!

As he took the tape out of the video player, Mr. Price thought of other ways he could use the Spanish station. He could record segments of the news in English and show a corresponding segment of the *Noticias.* He could start out with the weather, perhaps a hurricane story that would affect Puerto Rico or the Gulf. Afterwards they could discuss different perspectives—especially as they relate to culture—of the same story. Conversation and pronunciation would improve, but the added bonus of discovering and discussing cultural aspects would make class more meaningful.

Another activity the students could do would be to write to the Spanish station manager and request a program guide. Perhaps they could even find out if there are other programs on teenagers in the station's morgue. And for homework, Mr. Price could assign watching a *novela,* Spanish soap opera, such as *Marisol,* something any adolescent should find titillating enough to discuss in class.

Conversation in this classroom should pick up in the next few weeks . . .

The Debate Goes On

Terrell, an eighth-grade student, walks into the room in the municipal library where he and his classmates are preparing to present an election debate to the community. Since he will be the emcee at tonight's event, Terrell wants a chance to look at the displays so he can point them out in his introductory remarks.

Terrell reflects a moment about being the emcee. He never dreamed when he transferred to the James Banks Middle School that his propensity for talking could be turned into something positive! But here he is, getting ready to speak before a lot of adults in the community about a school project, and he feels proud. As he looks around the room, Terrell feels proud of everyone who has contributed to the election debate that would go on in just a couple of hours.

Terrell picks up a brochure from a stack that sits by the "welcome" sign. His friend Anthony, whom he considers to be an excellent illustrator, created the front flap and Janice, one of the shyest students in his class, labored over the headings written in exact calligraphy. The brochure indicates that the sixth graders were in charge of the debate over local issues, the seventh graders would debate the state issues, and the eighth graders would present the issues at the national level, with a note on the attention the third (and fourth) political parties were receiving this election year.

The agenda indicates that listeners would actually have a choice in what they hear. Terrell remembered the committee discussion where it was decided that each level of government would hold debates that represent the candidates' points of view on three different issues. The student speakers, then, would express the views of candidates who were running for city council, the state legislature, and the national legislature. The students selected the issues to be debated and researched them, much like a campaign team would, in preparation for the debate. The local issues the students selected deal with whether the town should build an arts building or a recreation building, whether to build low-cost housing on a wetlands area, and whether to raise the real estate tax base. The state issues focus on restoring the prairie, legalizing gambling, and approving vouchers for education. The national issues look at health care and drug prevention, minimum wages, and AIDS legislation.

Terrell looks again at the welcome sign that is part of a three-panel display. Photographs showing the students meeting with various town leaders and state legislators are arranged artistically on the panels. Neatly handwritten and laminated placards explain each picture. Terrell makes his way around the room taking one last glance at each display: Resources, The Past and Present, Data and What It Means, Our Survey, and Student Writing.

He stops at the Resources table, which includes newspapers, magazines, and books the students had used to gather information for the project. A list of national and local television news stations is also posted, along with the names of people who contributed to the project, such as politicians and town leaders, as well as staff from the local newspaper who conducted a workshop on writing effective ads, reading critically and reading for bias, and conducting interviews.

At The Past and Present table, Terrell sees some of the sixth graders' work—a poster of the history of the different political parties. A flier attached to the poster explains the political philosophy of each party and how long it was considered a viable party. A double-panel display shows the division of power into the legislative, executive, and judicial branches of government. The parallel panel identifies who currently holds each position at the national, state, and local levels. Another poster defines slogan and motto and provides a brief history of the use of these literary devices. Posters on all the walls encourage a vote for "my candidate." They are covered with slogans and mottoes created by the students.

A nearby table holds posters that relate various kinds of data: the changes in the number of representatives who are sent to Washington based on the state's changing population; how districts have changed over the years; how many men and women have represented the state in both the House and the Senate in the state capital and in Washington; and how many eligible voters there are in the town, in the state, and in the nation, with a corresponding list of actual voters from the last four presidential elections. A statement at the bottom of the chart predicts how many people will vote in this year's election.

Another display shows the results of a national survey, with an explanation of what the "plus or minus five points" phrase means. Beside it is a sequenced display of a survey the students conducted in town, including the survey questions themselves, the raw scores for each question, and the percentages for each question. Finally, an interpretation of the results is offered.

Along the side of the room is a display table with the heading Student Writing. On the table are some samples of journals the students at each grade level kept while making their inquiry into politics. A local newspaper is turned to the page with a student's editorial on housing construction on the wetlands just outside of town. The student used data about the dangers of building foundations on spongy ground as the basis for her article. She offered an alternative site for building the much-needed, low-cost housing. Among the display materials are interview notes the students kept when they conducted face-to-face and telephone interviews with local, state, and national candidates.

In the front of the room near the debate area is a poster listing the criteria for effective persuasive speeches. A note at the bottom indicates this rubric was developed by the student body.

Terrell goes to the front of the room and looks over his notes. He intends to begin his presentation by explaining that every year the middle school faculty plan a culminating event that involves the whole school and takes several weeks to implement. This year they decided to focus on government and politics. They planned to devote the entire last quarter to the project. Terrell will explain how student involvement was sought in coming up with a project to explore this topic. The faculty proposed integrating what they had been teaching during the year, but much of the decision making was left up to the students. It was they who selected the topics to be debated as well as the ways to display the knowledge they gained about national, state, and local government. In their presentations, the students demonstrated how they drew on skills in mathematics, science, language arts, research, and art in addition to the obvious social studies and civics content to complete this project.

Terrell looks up when he hears the first audience member arrive. He hurries off to tell his classmates that it's time to hand out agendas and escort people to their seats. It won't be long now!

Fridays and Freytag's

It's Friday, and Mr. Allen counts out 26 copies of next week's spelling list for his fifth-period language arts class. Because the fifth period meets after lunch, he finds that setting up a structure of a spelling pre-test on Wednesdays and a post-test on Fridays helps to calm down his eighth graders. Grammar reviews on Tuesdays and Thursdays serve the same purpose. Mr. Allen likes this format for his class since it means one activity can be completed at a time. Usually he has two segments to the period: the shorter skill work (such as spelling or grammar, but also including sentence combining or scanning lines of poetry) and a longer length of time for a literature or composition activity. Sometimes he divides the period into three slots, giving the students literary brain teasers to solve. He usually saves those activities for holiday weeks.

Today, as usual, the spelling routine lasts about 10 minutes. Mr. Allen collects the papers and hands out the new list for next week.

That leaves about 30 minutes for the literature activity. The class is reading *I Never Promised You a Rose Garden,* the journey of a teenager into and back from mental illness. Mr. Allen has assigned various small groups to summarize the plot development in each chapter. Today he has prepared a lecture to accompany the summaries, a follow-up to the introductory lecture he had provided at the beginning of the unit on plot structure. In that initial lecture, he used Freytag's Pyramid, a plot structure diagram that shows the various aspects of a story's development. It includes the Inciting Incident, the Rising Action, the Climax, the Falling Action, and the Denoument or Conclusion. Mr. Allen's favorite lecture is telling the students why their guesses about the climax are wrong, explaining the difference between the most exciting event and the turning point in the action, "the place at which the rising action reverses and becomes the falling action." He expects the students' summaries to take about 15 minutes, giving him the last 15 minutes of the period to chart their course on Freytag's Pyramid.

When the students enter the classroom they get ready for the spelling test. One student groans because he forgot to study the list again. Mr. Allen jokes with him and suggests he can use the one minute before the test starts to cram. The test itself goes smoothly, with Mr. Allen saying each word, using it in a sentence, and saying it again. At the end, he asks if anyone wants any word repeated, and then he collects the papers.

Then the discussion of the novel gets under way. The small groups who are responsible for summarizing today's chapters pull out their notes as the rest of the students rearrange their chairs in a circle. Sarah starts explaining how Deborah, the main character, hears voices in

a unique language, when Tory interrupts with a question about the "unique language" and Deborah's other symptoms of mental illness. He is quite serious, and another student asks if he's hearing voices! Tory smiles a little self-consciously and says he's interested because his cousin was just sent to a special hospital, and he wondered if this would be a good book to give her. Before any of his friends can respond, Mr. Allen says Tory might want to ask his aunt what she thinks, and gently steers the conversation back to the chapter summary. As Sarah continues, he thinks to himself, "I can't let the group get off topic like that. That whole topic of teen problems can just explode with issues I can't answer. It's better we just read about Deborah and how she triumphs and move on to the composition lesson in a couple of weeks."

Project-Based Science

Adapted from the NCREL videoconference *Learning With Technology: Tools for Thinking,* 1995

Students in the ninth-grade Foundations of Science class at Community High School in Ann Arbor, Michigan, enter the science room, plug their laptops into the network, and begin to work with their teams on their current project. The room is noisy, but it is productive noise. Students are busy talking with one another and their teachers as they investigate how the glaciers shaped Ann Arbor's terrain.

Community High School has a project-based approach to science that integrates earth science, biology, and chemistry. Mike Belden, Elizabeth Asker, and Madeline Burgess team teach this course, and, although the class is quite large, they each know the students and are familiar with their group projects. The teachers begin their day at Community High School by discussing with each other how things went the day before. They talk about how one of the groups got off on a tangent. They needed to decide how to get the students back on track without crushing their curiosity. And another group was having trouble finding information on their topic. The teachers try to think of resources for the students and ways to direct them without doing the work for them.

The project on glaciation is in its second week in what is expected to be a multiweek inquiry. The goal is to investigate the area using a variety of tools—topographic maps, computer modeling programs, rock samples, and access to geologists across the nation, to name a few—and then to create some kind of product that demonstrates the students' knowledge. Students are assigned to groups or teams (which change with each new project) based on interest. This time, Ray, Paul, David, Jean, and Melissa are exploring the terrain of one of their favorite recreation spots in the area, Bird Park. At some point during the project, Mr. Belden temporarily regroups students to share information and help each other fill in information gaps. Anyone who doesn't understand topographic maps, for instance, can join a group where the maps are explained and they can investigate the kinds of information the maps reveal. The subgroup is led by either one of the teachers or another student.

During the project, each team is responsible for developing a plan for conducting its research and for managing that plan using a software program, *PlanIt Out,* developed by the University of Michigan. After identifying all of their tasks, the team plots them on the computer screen. Then they agree on who will do each task and by what dates. The computer program draws a graphic with lines connecting people, tasks, and dates, and each team member gets a printout. The teachers know that the Program Manager "dictates" tasks and due dates, which helps make the students more responsible for their own learning.

The science room has several ethernet ports, which simply means the computer system is flexible. This system allows the teachers to move computers around on the same network. In addition, the network is connected to a router and an ISDN phone line. That means it is connected to the Internet at relatively high speeds, allowing up to 40 students to access the Internet at the same time. Students check out notebook computers on a daily basis and then simply plug them into the network to retrieve their files stored on the server. They have the computers on their desks every day and they use them to take notes, develop spreadsheets, and create graphical representations of data. Students are also allowed to take the laptops home, where they can access their files on the school's server.

The teams have a number of tools at their disposal. Cathy's group has located some topographical maps from City Hall and is examining them for round lakes that have the regular concentric lines typical of kettle lakes. Randy and his team are using Netscape to search for information about glaciation on the World Wide Web using the Web Crawler search engine. They found extensive resources and are in the process of winnowing them to those that apply to Michigan. Another group of students is using a variety of CD-ROMs that contain images and information.

In one corner of the room a group is using *Vista Pro*. This is a 3-D rendering program that allows the students to create computer-generated movies of the area they are studying. With the aid of a "wizard," students are able to create models independently with little additional guidance from the teachers.

By scanning in a topographical map of the area—for instance the Huron River—and feeding in information about such things as water sources and where the river and the moraines are, the students are able to "fly" around the landscape and become familiar with the geography from a bird's eye view—to see it from all angles. As John points out to an observer, "I don't get to go to the Huron River very often, so it is nice to be able to see the features before we go there so that I'll be familiar with the area." Sue adds, "The view we see from the air is really different from what you see when you're on the ground. There are some things I'd never recognize if I was just walking around there." While the end result is impressive, the students come away from this experience with much more than a glitzy presentation. The program helps to highlight the different relationships among land features and how one thing could have caused another. Students are better able to see the importance of separate factors and variables and to see how they affected their environment today.

Joshua is comparing soil and rock samples his group gathered to the collection in the lab, noting in his electronic journal where the samples were taken. He will later transfer this information to the geological map his group is creating. Edwin is sitting at the computer trying to connect with a professor of geology at the University of Montana. He wants to

know if the professor can explain the evolution and shape of eskers. If he strikes out at the university, he has another e-mail address to a site he just found on a Gopher, where he can "Ask-A-Geologist" his question.

As the teams go about their work, their teachers can be seen moving from group to group. They provide feedback and assistance and keep track of problems and progress. They chat with students about their plans and decisions about resources, strategies, and tools. A particular challenge emerges when two different groups receive conflicting responses to a question posted to a newsgroup regarding the end of the glaciation period. Ms. Burgess encourages the students to discuss possible reasons for the different answers. One student relates the discrepancies to their earlier studies about differing and changing interpretations of tectonic plates. Another student suggests that it would be easy for a source to make an error on an e-mail response if he trusted his memory instead of checking the facts. Another suggests there might have been several glaciation periods, or that there may be different periods for different regions of the country. Ms. Burgess encourages the students to find out more, to go back to their sources and get substantiation, and to go to other sources as well. She agrees with Steve that the problem could be based on different locales and suggests being very specific about the question itself.

Aurelio's group has already begun creating their final product. They're using a multimedia development tool called *Media Text,* which makes it easy for them to create a multimedia product consisting of text, graphics, sound, animation, and video. They've decided to build a physical 3-D model of a park and to create a tour guide. Numbered miniature flags will be attached at specific spots on their model. In their *Media Text* presentation they will call up, with the click of a mouse button, the images and special information about each of the numbered sites. The group seems particularly proud of their animated figure who climbs the trail and points out interesting features.

As seen through the interaction between the teachers and the students, assessment is ongoing. The teachers have a good idea of the kind of effort students made on the project because of the daily interactions with the groups. Even if something turned out "wrong," the teachers know the students are learning. At the end of the investigation, the groups' final projects will be evaluated, as will the students, both individually and within their group. All of the products generated for the project serve as evidence of learning, but the teachers also look for explanations that indicate the students have developed a solid grasp of scientific principles.

After the project presentations, the teachers will debrief with the students on what they learned in terms of content, technology skills, and applications, as well as collaborative and problem-solving skills. "Teamwork" means teachers and students are working together.

Research and Presentations

As the school year ends, Ms. Griffin has planned an assignment to help her fifth-grade students sharpen their technology skills. She assigned research topics that they will explore using the computer to access Internet web sites and CD-ROMs such as *Groliers* and *Encarta.* The students will have one week to do their research: investigating the key people or events regarding their topic, what happened, when it took place, and any description of the topic that the students would like to include. They will have three days to plan their presentations and then a day to make them to the other members of the class. Their class presentations will include *KidPix* slide shows, with pictures the students generate themselves on computer or that they download from a Web site; scanned pictures from books that they can incorporate into their presentations; and use of the Flex Cam equipment, so they can use pictures of objects in their presentations. They can also use *HyperStudio* to create their own multimedia presentations, bringing text, sound, graphics, and video into the final products.

Ms. Griffin's research topics were volcanoes and transportation used in the westward movement: wagon trains, ships sailing around Cape Horn, or the transcontinental railroad. Ms. Griffin thinks these topics are interesting, and the one on transportation even ties in with a unit the class recently finished on the events that led up to the Civil War. She has divided her students into six groups of five so that each person in the group has a specific responsibility for the research: searching the Web sites, collecting all the pictures the team finds for the presentation, organizing all the audio and video clips they'll use, typing the report on the word processor, or documenting all the technology used. One group will research wagon trains; one, ships; two, the railroad; and two, volcanoes.

Ms. Griffin has bookmarked sites on the Internet that are suitable for the students to use in the classroom. She bookmarked two Web sites for each topic area. She also prepared signs to post at the computer center to remind students not to talk while gathering their research, since other students would be trying to concentrate on their tasks at the same time.

The room is set up in centers. One has six Mac computers with a connection to the Internet. Another is the writing center, a corner where two tables are pushed together where students can work on their individual sections of the report before they send their portion to the word processor expert. A third center is for reading. It consists of a table where Ms. Griffin has displayed a collection of resource materials on the topics. Students also have the opportunity to go to the library during research time to find additional print materials and to use the computers there.

The students are soon immersed in their projects. One group finds a picture of a wagon train in *Groliers* that included a description of its dimensions and a list of typical items that were packed in them for the trip West. Another member of this team draws pictures of the family that headed West by using *KidPix*. Someone else finds a map with the Oregon Trail marked. She wants to scan this outline and put it in the report, with flags showing how much progress the wagon train made each week. Her teammate tells her she ought to use tiny pictures of wagons instead of flags—it would make their presentation look so much better. The two become engaged in a conversation about what color to make the wagons; they are intrigued by all the choices in the color palette and try out each color to see which one they like the best.

Dontay is researching the men during the Gold Rush period. He discovered that many traveled to California by ship, going all the way around Cape Horn to reach the West Coast. He wants to use a picture of a clipper ship in his group's presentation, but can't find one. He asks Ms. Griffin for help, and after several minutes of looking, she agrees that an adequate picture can't be found. She suggests using a picture of any ship so that he can learn to use the scanner.

Cara's group is excited because they found a QuickTime movie of a volcano that erupts on a CD-ROM. They watch it over and over again because it is so cool. They can see the lava spill over the mountainside and see it destroy all the vegetation. Cara tells her teammates about how easy it will be to plan their presentation:

"See, I found this information in *Groliers.* It tells about the crater and how it becomes a caldera—or something—after an eruption. And it lists all the stuff from a volcano, like the lava and magma. We can put in this information about Plinean eruptions and Pelean eruptions and stuff like that."

At this point Jerry asks what all that means. Cara looks at him with a somewhat exasperated expression on her face.

"Well, I can't explain it *all,* but we don't have much time to do more research. Today is the last day we can use the Internet Web site, so we have to cut and paste this information into our report. And there's more stuff here we can use. There's a map of the world that names all the volcanoes. With these paragraphs and the pictures, we'll have a lot. And maybe with *HyperStudio* we can make a picture of a volcano look like it's erupting, just like we saw on the CD-ROM. We'll have the best presentation of anybody!"

Cara's teammate Tyrone is exploring the Web sites that deal with volcanoes. He thinks the pictures from "Absolutely Volcanic" are great. There are lots of pictures of volcanoes, some of them are erupting. There are pictures of famous people in Hawaii, pictures of boats and beaches—all sorts of things they could put in their presentation. He also found a tour you can go on in the "Costa Rica Nature and Photo Tour" site. Here he finds pictures of cloud forests, monkeys, birds, butterflies, and people in their native costumes. He even finds pictures of sports figures that he recognizes. He downloads all of them since they are colorful and will look good in their presentation. And besides, they need to check off "Pictures" in their checklist of multimedia for the Work Report Ms. Griffin gave them. Tyrone feels he has found a good resource. With Cara's information from *Grolier's*, they *would* have the best presentation.

Ms. Griffin is pleased with the work her students are doing. She feels the students get the opportunity to show they are experts on a subject when they have presentations like this to make to the whole class. They feel like they have the knowledge to share with others and that this is something they have put together. It's so much better than just answering some questions for a test. As she checks off what each student is doing, she feels she knows the students are gaining the information and the knowledge that she has assigned them and at the same time are improving their skills in using technology.

Sample Lessons

Sample Lessons

Use these sample lessons to generate ideas for your own lessons. We do not recommend simply using the lessons without considering how to adapt them to fit the needs and interests of your students and the context of your teaching. As you read the lessons, focus on the three guiding questions.

Guiding Questions

1) **In what ways does this lesson promote worthwhile and meaningful learning?**

2) **In what ways does this lesson promote engaged learning?**

3) **How does technology enhance and extend this lesson in ways that would not be possible without it?**

Bosnia: The Complexities of Civil War

by Mary Anderson

Ideas for this lesson were contributed by Cheryl Franson, Jackson Middle School, Minnesota (submitted to TIES). Additional web site contributions came from Jim Mikoda, NCREL.

Subject Matter Emphasis and Level:

Social Studies/Language Arts
Grades 6–8

Brief Description of the Unit:

This unit investigates the different perspectives on the volatile political situation in Bosnia. Students must evaluate these perspectives in light of democratic principles, which will contribute to their understanding of their own political structure. Students must also debate the issues and decide which evidence is most valid and therefore most persuasive.

This is one unit in a much larger unit on government.

Goals:

1. Students will learn the reasons that civil wars are so difficult to settle. They will focus on the many perspectives that generate conflict. This goal will help meet standards for social studies and civics. Students will understand:

    - The concept of a government, the various purposes a government serves, and the conditions that contribute to the establishment and maintenance of a government.
    - The major responsibilities of the national government for domestic and foreign policy.
    - The purpose of laws and the importance of the rule of law for the protection of individual rights and the common good.
    - The role of diversity and the importance of shared values.
    - How the world is organized politically into nation-states and how they interact with each other.
    - The role of government in issues regarding personal, political, and economic rights.

2. Students will use evidence persuasively to debate conflicting issues surrounding civil war. This goal will help meet standards for language arts. Students will:

   - State a clear position.
   - Elaborate on this position with reasons, examples, information, and other evidence that is organized and relevant to the writer's purpose.
   - Develop a clear and knowledgeable judgment.
   - Offer causes and effects for a situation and provide useful, specific, and well-developed persuasive evidence for the validity of the proposed causes and effects.
   - Anticipate and address audience concerns and counter-arguments.

Content:

- The political and economic situation in Yugoslavia (parts of which are now Bosnia) were different before the fall of the Soviet Union.
- Political and economic changes can bring about conflict.
- People react differently to political and economic changes.
- Civil wars are sparked by different issues, such as religion, culture, and political views.
- Democratic principles and basic human rights can be examined in different contexts.
- Effective rhetorical devices can influence one's decision about whether to support a particular viewpoint.

Prior Learning, Interests, Misconceptions, and Conceptual Difficulties:

Students may:

- Be familiar with the war via television news and newspaper accounts.
- Have only a sketchy understanding of the historical background of the war in Bosnia.
- Have an incomplete understanding of democratic principles.
- Have an incomplete understanding of communistic principles.
- Be interested in political conflict.
- Have an implicit competence in persuasive speaking that should be made explicit.

Major Learning Activities:

- Research "before" and "after" aspects of Yugoslavia—before the war began and after Yugoslavia was divided; look at its political structure in particular.
- Chart the different political stances that created the current division.
- Investigate each of the stances that contributed to the Bosnian civil war using the Internet and other reference materials; compare points of views and conclusions from the various resources; evaluate the arguments in terms of democratic principles and human rights (create a rubric based on information from previous lessons on democracy).
- Read excerpts from *Zlata's Diary* to get a teenager's view of the war and its effect on her daily life.
- Keep a journal that describes the research findings and a personal response to these findings.
- Debate the issues that led to the civil war, using research findings to support/refute the different sides; decide which stance is best supported; decide which stance is most in alignment with democratic principles.

Materials and Resources:

Books and other familiar resources:

- Newspapers (national and international)
- Information texts on democracy, the Soviet Union, Bosnia, etc.
- *Zlata's Diary*
- Journals
- Rubric of democratic principles and human rights
- Comparison/contrast chart for the different political stances

Community resources:

- Residents who are refugees from Bosnia
- Museum exhibits

Technology resources:

- Computers with Internet access
- Online newspapers (national and international)
- CD-ROM encyclopedia and other CD-ROMs that include information on topics such as democracy and human rights
- Electronic and print atlases
- E-mail correspondence with Bosnian residents and/or members of the international peace-keeping force
- Electronic newgroups and listservs that deal with the topic of the Bosnian war
- Word processing program

Useful Web Sites:

General News Information About Bosnia
http://www.tue.nl/aegee/hrwg/exyu/news.html

Map of Bosnia
http://geog.gmu.edu/gess/jwc/bosnia/bvfintro.html

Bosnian Virtual Field Trip
http://geog.gmu.edu/gess/jwc/bosnia/bosnia.html

Bosnian Photos
http://geog.gmu.edu/gess/jwc/bosnia/pictures/pictures.html

Maps
http://geog.gmu.edu/gess/jwc/bosnia/maps/maps.html

People
http://geog.gmu.edu/gess/jwc/bosnia/people/people.html

Why Bosnia Weeps
http://pathfinder.com/@@ni3b1gcAWAekOeWc/TFK/bosnia/bosnia.html

Waging War to Make Peace
http://pathfinder.com/@@ni3b1gcAWAekOeWc/TFK/tfk0915/bosnia.html

Tearful Homecomings in Bosnia
http://pathfinder.com/@@UO@55AcAXwfzasjx/TFK/TFK960329/news.html

New Hope for Peace in Bosnia
http://pathfinder.com/@@ni3b1gcAWAekOeWc/TFK/tfk0922/news.html

Bosnia Archives (from TIME)
http://pathfinder.com/@@ni3b1gcAWAekOeWc/time/daily/bosnia/archive/951208.html

Newsgroups
alt.current-events.bosnia
misc.news.bosnia
soc.culture.bosnia-herzgvna

Listserv
bit.listserv.bosnet

Assessment:

The debate is the performance assessment that demonstrates students' understanding of political principles, the complexities of a civil war, and the use of supporting data to persuade.

Management:

Students can be divided into groups for the research. One group can use computers, one can use print resources in the room or in the Resource Center, and one can write responses in their journals. Groups can also plan their debate presentations. The whole group can create the rubric if it has not already been created in a previous lesson.

Support Services and Special Teacher Notes:

- Technology troubleshooter for classroom implementation
- Professional development on how to search the Internet

World Hunger

by Margaret Tinzmann, with web site contributions from Jim Mikoda

Based on Are You Really Hungry?, from Jones, B. F., & Tinzmann, M. B. (1990). *Breakthroughs: Strategies for Thinking,* Columbus, OH: Zaner-Bloser.

Subject Matter Emphasis and Level:

Science, health, and social science
Grades 7–8

Brief Description of the Unit:

Students learn what hunger and nutrition are, what effects hunger can have, and some causes of world hunger. Students also generate solutions to world hunger.

Goals:

Students will learn:

- What good nutrition is.
- Some causes of world hunger.
- Some possible solutions to world hunger.
- Some of the many effects of world hunger.

These unit goals relate to the following standards and benchmarks for this grade range. The student:

- Understands how eating properly can help to reduce health risks such as malnutrition.
- Knows factors that influence food choices (e.g., activity level, peers, culture, religion, advertising, time, age, health, money/economics, convenience, environment, status, personal experience).
- Understands that scarcity of resources necessitates choice at both the personal and societal levels.
- Understands that all societies have developed economic systems in order to allocate their resources to produce and distribute goods and services.
- Understands the spatial aspects of systems designed to deliver goods and services.

Content:

- All humans have basic nutritional needs—nutrition concepts to be learned include caloric needs related to age, activity, climate; nutrients (carbohydrates, fats, proteins, vitamins, minerals) and their different functions; food groups; and the components of a balanced diet.
- Millions of people suffer from undernourishment or malnutrition, and many starve to death—hunger concepts to be learned include undernourishment, malnourishment, and starvation.
- The causes of hunger vary from natural to human.
- Political and other factors can aggravate or ameliorate hunger.

Prior Learning, Interests, Misconceptions, and Conceptual Difficulties:

Content:

- Students may be familiar with Dickens' book *Oliver Twist,* which contains descriptions of being hungry.
- Students may have a simple concept of hunger.
- Students may think that eating a lot guarantees being well nourished.
- Students may be familiar with world hunger issues from recent world events.

Processes:

- Students understand how to work in cooperative groups.
- Students use graphic organizers to take notes and display data.
- Students set their own learning goals and make predictions.

Major Learning Activities:

- Participate in a whole-group K-W-L at the beginning and end of the unit.
- Predict what the unit is about, set learning goals, choose a task to demonstrate learning and understanding. Keep open the possibility of revising one's plans for demonstrating learning later in the unit.
- Read individually and discuss in small groups literature that illustrates hunger, especially excerpts from *Oliver Twist.*
- Write a personal experience of being hungry.
- In small groups, research basic nutritional needs. Use various resources listed below.

- Record what one eats for one day and classify foods into nutrient categories.
- Reflect on what one ate—its nutritional value, and so on. Share reflections in small and whole groups.
- Work in small groups to research and compare some problems that hunger causes. Make group plans and divide tasks fairly.
- Work in small groups to research causes of world hunger. Make group plans and divide tasks fairly.
- Communicate with local experts, children, and officials in other nations about issues related to hunger.
- Communicate with American students who live in farming communities and in urban areas about nutrition, hunger, and growing and obtaining food.
- Create and present solutions to world hunger. Decide whether this should be a group or individual activity.

Materials and Resources:

Books and other familiar resources:

- *Oliver Twist* and other literature dealing with hunger
- Information texts for research
- Local, national, and international newspapers and news magazines
- Magazines for pictures of food
- Videos about nutrition and/or hunger
- Photo collections showing hunger

Community resources:

- Nutritionist from a local hospital
- Soup kitchen staff
- Grocery store personnel
- Department of Natural Resources, Farm Bureau staff
- Political leaders from developed and developing nations
- Individuals from nations who have experienced hunger
- Local, national, and international audiences for students' work

Technology resources:

- E-mail and other communication tools for communicating with experts and others
- CD-ROM encyclopedia
- Software to analyze data
- Graphics software
- Word processing programs for writing reports
- Project management software
- Presentation software for creating reports
- Internet Web sites

Useful Web Sites:

United Nations Children's Fund
The UNICEF page contains information on problems children of the world face, including hunger and malnutrition
http://www.unicef.org/ -home page
http://www.unicef.org/facts/nutri.htm

World Food Programme
Information on United Nations hunger relief operations
http://www.wfp.org/ -home page
http://www.wfp.org/Op_Emer_Descr.html -summary of 1995 relief operations
http://www.wfp.org/Op_Emer_1995_Table1.html

Food for the Hungry: World Crisis Network
Home page of an organization working to end hunger throughout the world
http://www.fh.org/wcn/index.html -home page

Freedom From Hunger
Information about hunger and relief efforts
http://www.freefromhunger.org/ -home page
http://www.freefromhunger.org/myths.htm -hunger myths and realities
http://www.freefromhunger.org/didyou.htm -did you know?. . . about hunger

The Good Health Web
Articles and information on health and nutrition issues

http://www.social.com/health/index.html -home page
http://www.social.com/health/ific/child_adol/main.html -child nutrition
http://www.social.com/health/ific/adult_nutr/main.html -adult nutrition
http://www.social.com/health/cic/food_nutr/main.html -food and nutrition

Ask the Dietitian
Information about good nutrition and other aspects of good health
http://www.dietitian.com -home page

HungerWeb
Links to research and organizations that combat hunger
http://www.brown.edu/Departments/World_Hunger_Program/-home page

Allocca Technical's Health Information Library
Dietary and nutritional information
http://www.quickpages.com/essential.nutrition/nut5.htm -home page
http://www.quickpages.com/essential.nutrition/amerdiet.txt -The American Diet . . .

Collections of links to sites related to hunger
http://www.iglou.com/why/whylink.htm -World Hunger Year Links
http://www.freefromhunger.org/links.htm -Freedom From Hunger Links
http://www.wfp.org/URLs_Home.html -World Food Programme Links

Assessment:

Both teacher and students participate in assessment.

- Prepare portfolios of best work. (All students)
- Create rubrics to evaluate presentations and products. (All students)
- Create at least one product or presentation that demonstrates understanding of nutrition and hunger, e.g., tabloid on hunger in the past and present, fictional account of hunger, written or oral eyewitness account of hunger or malnutrition, posters showing nutritional needs and balanced diet, graphic organizers illustrating causes and effects of hunger, multimedia presentations on nutrition or hunger, letter written to political leaders presenting solutions to hunger. (Students choose one or more.)
- Seek and obtain feedback from classroom guests and individuals at remote sites as well as from oneself, classmates, and teacher. (All students)
- Assess oneself on how well personal goals were met. (All students)

Management:

- Be sure students have access to all resources they need.
- Bookmark some Web sites to avoid lengthy Internet searches.
- Review rules and roles for cooperative groups.
- Plan for cooperative groups to work at the same time on different resources so that all students have time on classroom computers. Sign up for time in the computer lab, if necessary, for additional access to the Internet and other electronic resources.
- Review how to be a good audience.

Support Services and Special Teacher Notes:

- Technology troubleshooter available for hardware breakdowns
- Tech expert for Internet
- Special education staff to assist as needed
- Professional development on how to use e-mail and listservs

Video Overviews

Overview of Video Scenarios

Exploring Africa

Grade 6 Multidisciplinary (Social Studies/Language Arts)
Lincoln School
Springfield, IL

In this interdisciplinary project, students use CD-ROMs, books, maps, and the Internet to study the countries of the African continent. The students, working in groups, are researching individual countries. Their final project is a multimedia presentation, supplemented by maps and papier-mâché animals indigenous to Africa.

Navigating the Information Super Nile

Grade 6 Multidisciplinary (Social Studies/Language Arts)
Lincoln School
Springfield, IL

Using the Internet, students follow the journey of two kayakers as they travel down the Nile River. They review the journals of the travelers and e-mail them to ask about the weather, geology, customs, and people of Uganda. Their final multimedia presentations include a QuickTime movie.

Space

Grade 6 Multidisciplinary
Abbott Middle School
Waukegan, IL

In this problem-based unit, students are developing frequently asked questions about space exploration and then developing responses to some of those questions. Working in stations, their research tools consist of CD-ROMs, the Internet, media resource materials, NASA documents, and interviews with an expert who is visiting their class. Their final product is a group multimedia presentation, which is self-, peer-, and teacher-assessed.

Trash Talk

Grade 6 Multidisciplinary
Abbott Middle School
Waukegan, IL

In this unit on ecology, students are developing frequently asked questions and answers about ecosystems and are specifically researching landfills in their area. They are using CD-ROMs and print-based materials. Their final products are in the form of multimedia presentations that incorporate student-produced video clips.

Are We There Yet?

Grade 5 Multidisciplinary
Greenwood Elementary School
Waukegan, IL

Students in this classroom are planning a virtual vacation. Using CD-ROMs, spreadsheets, and print-based materials, such as travel guides and maps, they start with $400 in play money and a point of origin. They are to plan the trip, using such skills as mapping, creative financing, and geography research. Multimedia presentations are their final products.

You in the Zoo

Grade 6 Multidisciplinary
James Coleman Wright Middle School
Madison, WI

Students are beginning their study of habitats by researching themselves and their own habitats. They are creating zoo cards that are much like those explaining animal habitats. All students create individual multimedia presentations that include a description of themselves and where they live, what they eat, and what their habits are.

Discovering Tigers and Pandas

Grade 7 Multidisciplinary
James Coleman Wright Middle School
Madison, WI

In a unit about endangered species, each student is asked to investigate three endangered Wisconsin animals and three endangered animals from other countries. One student discusses her search for information about tigers; another talks of looking up pandas. The students tell how they found sites on the web and what kinds of information they discovered. The students use *ClarisWorks* to present their projects, and their documents are published on the school's Web site.

The Book Club

Grade 5 Extracurricular
James Coleman Wright Middle School
Madison, WI

This after-school activity, run by the library media specialist, encourages students to read and report on books of particular social significance to teenagers. After reading a variety of self-chosen books, the students write book reports that are then published on the Internet. These students have heard from readers all over the world and have pen pals.

Music With Technology

Grades 5–6 Music
James Coleman Wright Middle School
Madison, WI

A small group of students from a strings program, working with their computer resource teacher, uses software and a synthesizer to create a digital masterpiece based on their original composition. The technology enables these students to have a creative musical experience not possible without these tools.

Art & Technology

Grades 9–12 Art
Wheelersburg High School
Wheelersburg, OH

Students use technology to create interactive portraits that integrate traditional art with computer-generated images. These works are enhanced by poetry, music, and photographs. Students place their digital art into a virtual gallery, making them available to everyone who has access to the Web.

Wind and Windmills

Grade 6 Multidisciplinary
Hillside Elementary School
Cottage Grove, MN

The students in this class are involved in a six-school project sponsored by the Franklin Institute. The institute provided teacher lesson plans, materials, and expertise for students across the country to research wind by studying, building, and testing their own windmills.

Historical Fiction

Grade 6 Social Studies/Language Arts
Hillside Elementary School
Cottage Grove, MN

These students study World War II by reading books and using Internet resources to correspond with survivors of World War II. By joining a listserv of WWII soldiers, death camp survivors, land workers, and others, they are able to make the connection that historical fiction is based on actual fact. One of their final projects is to write their own works of historical fiction.

Management Tips

Management Tips

1. **What do I need to consider before going on the World Wide Web?**

   There are a variety of factors to consider:

   - What are your objectives? Seriously consider what you expect to get from this activity. Is it to be a stand-alone experience or one combined with other research activities, such as a trip to the library or an actual experiment? The Internet may not be the best way to access the desired information.
   - How much time do you have? Do you have only one hour to accomplish your goals? How much prep time will it take to figure out what you are doing? Do you want to take several days? You will need to balance how long it will take and how much time you want it to take.
   - What kind of equipment and software is needed and what kind of equipment and software is at your disposal? Knowing how much equipment is at your disposal is crucial when planning an on-line experience. Do you want students to work alone, with a partner, or as a member of a group? Is it difficult to get access? Will you have to coordinate the timing of your requests for equipment? Do you know what pieces of equipment are needed? If you don't, find someone who does.
   - Will you need technical, management, or organizational support? This is crucial. Find someone who can advise you if you have any questions. Remember, the Internet is just another resource tool. It cannot perform magic tricks. Understanding what is occurring requires some patience.

2. **What do I need to consider before putting my students on the Internet?**

   What is your school/district's Acceptable Use Policy regarding not just the Internet but all forms of media? The student's responsibility is an important consideration. With the controversy surrounding the Internet and all that is accessible on it, it is important to discuss with your students expectations for responsible behavior on their part. It is up to you to guide your students through the experience with curriculum-related expectations. Students who are directed by a particular goal or assignment are less likely to get into trouble than those who are just browsing. Students also need to be aware of "netiquette" (network etiquette) and safeguards such as not giving out their own names, addresses, and phone numbers to unknown people. Students should be supervised by an adult:

either the teacher or a trained volunteer. You may want to provide an opportunity in the fall for parents to attend an Internet demonstration to make them more familiar with it.

3. **How do I integrate the Internet as a tool into my classroom?**

   Remember a few simple rules as you think about using the Internet in your classroom:

   - Curriculum drives the Internet, not the other way around.
   - Information literacy is a natural fit with the Internet. Do more than use the Internet for raw data. All students should use information to think.
   - Cooperative learning fits like a glove with Internet use. Have groups use the Internet for different aspects of the same subject.
   - Make sure the lesson merits using the Net.
   - Try it ahead of time.
   - Incorporate the Net into what you are already doing. (For example, if students are doing a unit on biography and need to use and evaluate three sources, simply make the Internet one of the sources.)

4. **Are there any tips for managing the Internet in my classroom?**

   There are a number of strategies you might try:

   - Make bookmarks work for you. Organize them into folders. Have Netscape Navigator open to your bookmarks rather than someone's home page.
   - Bookmark your favorite search engines.
   - Maintain the cache. This saves time loading pages you and your students use regularly.
   - Teach students careful typing of URLs.
   - Watch for school sites that have similar needs. They may already have found the links and included them on their home page.

5. **I have only a couple of computers (or other technology) in my room. How can I manage their use with a full class?**

   The same strategies apply here as with any teaching resource or tool. The computers become a station or learning center through which students rotate either individually or in small groups with specific goals and expectations. Posting objectives, outcomes, directions, etc., by the computers will help students stay on task. To be sure all students get adequate access, a time schedule may need to be posted. Perhaps a responsible student can maintain a watch over the schedule and remind students when their time is up. Students can also take turns at providing help in troubleshooting problems that occur. The computers should be placed in an area where the teacher can keep an eye on the activities taking place. Preparing students for the computer activities will be important for maintaining organization. Making sure the software is working and configured ahead of time will also save unnecessary interruptions.

6. **How can I simplify typing in the long addresses that sometimes appear for Internet locations?**

   Many times the addresses get so long that typing errors occur. If possible, just copy the address using your word processing commands and then paste it into the location window on your browser.

7. **My WWW pages take so long to load that I have time for coffee breaks! Is there anything I can do to speed up the process?**

   If your pages seem to be loading too slowly, consider turning off the automatic loading of graphics. (On Netscape, this is located under "Options" Auto Load Graphics). If you want to load graphics on an individual page, just click on the "Images" button in the middle of the Netscape toolbar, and the graphics on only that page will load.

8. **Why is it that some of the colors of the links I have chosen are different colors from others?**

   Netscape allows you to change the color of your links after you have visited them. One of the purposes of this is to help you remember where you have been. If you want to change the number of days the links stay a different color, go into the "Options" menu of Netscape and highlight "Preferences" or "General Preferences." Menus will vary slightly depending on the version of Netscape you are using. Choose the "Window and Link Styles" or the "Appearance" menu. Follow the directions on the screen to make your change.

9. **When my students or I use resources from the Internet, how do we cite our sources?**

   It is important to cite materials. The following is a source for citation information:

   "How to Cite Electronic Media" (from *Internet for Teachers* by Brad Williams published by IDG Books). These standards are modeled on the 1994 APA guidelines.

10. **What can I tell a parent who wants information about access to the Internet at home?**

    Occasionally, parents are wary of the Internet and your students are all gung-ho to have Internet access from home. These are some pointers to share with parents:

    1. Don't forget that while you are online your phone line is tied up unless you have a separate data line. They are available for $20 a month from local providers.

    2. Try to make this a family activity. Consider keeping the computer in a family room. Get to know your children's online friends as you would their other friends.

    3. Set reasonable rules and guidelines for computer use by your children. Post a copy of these rules by the computer.

    4. The Internet is a vast world much like our own physical one. There are places you wouldn't want your child to go. For a child, being online is a privilege. Expectations of our children's behavior online shouldn't differ from that at the public library. Keep in mind that everything you read online may not be true, just as in other media. Be sure to explain this to your children.

    5. Supervise your child. Check titles of newsgroups your child accesses. Remind your child not to provide personal information. You might want to consider purchasing software that blocks offensive material. Open communication is important. Stay in touch with your child. Request that your child tell you right away if he or she comes across anything that makes him or her uncomfortable. If you receive a harassing message, forward a copy to your service provider for assistance. Do not respond to the message yourself. Tell your child not to send any photos or personal information without checking with you first.

Designing and Refining Lessons With Colleagues: Tips for Productive Work

Designing and Refining Lessons With Colleagues: *Tips for Productive Work*

Many teachers have had limited opportunities to collaborate with their peers. This section describes one way to collaborate: by being a critical friend.

What is a critical friend?

A critical friend is a person whom we turn to or invite to question our educational actions and decisions. He or she stretches us to articulate precisely our rationale for those decisions and helps us to see important information from a different perspective. Critical friends are careful to take the entire context into consideration before offering feedback. Yet, while their main purpose is to provide support, they are not afraid to confront us with issues in order to help us become more than we ever thought possible.

How can a critical friend help with my professional growth?

Critical friends are good listeners and problem solvers who help us sort out our thinking and make sound decisions. They ask provocative questions that help us define our expectations and intentions, help us realize when our expectations for ourselves and others are too low, and tell us when our actions don't match our intentions. Such dialogue helps us grow professionally in ways that readings, conferences, or classes cannot.

What should I look for in a critical friend?

Critical friends possess certain core qualities:

- Respect
- Trust
- Rapport

In addition, they:

- Listen well.
- Clarify ideas.
- Encourage specificity.
- Fully understand what is being presented.
- Fully understand the context of the work.

- Fully understand the desired outcomes of the work.
- Offer value judgments only when the learner asks.
- Respond to the learner's work with integrity.
- Act as an advocate for the success of the work.

Critical friends avoid:

- Being negative—they are an advocate, not a critic.
- Participating without being invited to participate.
- Any conflict of interest or conflict of values with the project methods, and hiding any personal agenda (they may have an agenda that is complementary to the project's, but it must be shared with the participants at the time of their first interaction).
- Holding a stake in the problem being addressed without receiving permission from the participants to do so.
- Dishonesty and vagueness in their responses.
- Being judgmental.
- Directing the project—they are there to provide support.

How does the critical friends process work?

A typical process includes these steps:

- We, as learners, describe a practice, such as a lesson or teaching strategy, and request feedback from our critical friend.
- We set desired outcomes for our conference (allowing us to be in control of the feedback).
- The critical friend asks questions in order to understand the practice described and to clarify the context in which the practice takes place.
- The critical friend provides feedback about what seems significant about the practice.
- The critical friend raises questions and critiques the work, nudging us to see the project from different perspectives.
- Both participants reflect on the points and suggestions raised or suggestions or advice that seem appropriate to the desired outcome.

Step-by-Step Guide to Finding and Using Internet Web Sites

Step-by-Step Guide to Finding and Using Internet Web Sites

You need browser software to find and access information on the Internet. Many commercial browsers are available; several companies provide them free to educators, including Netscape (Netscape), Microsoft (Explorer), and the National Center for Supercomputing (Mosaic). Your computer support person can help you get copies of these browsers.

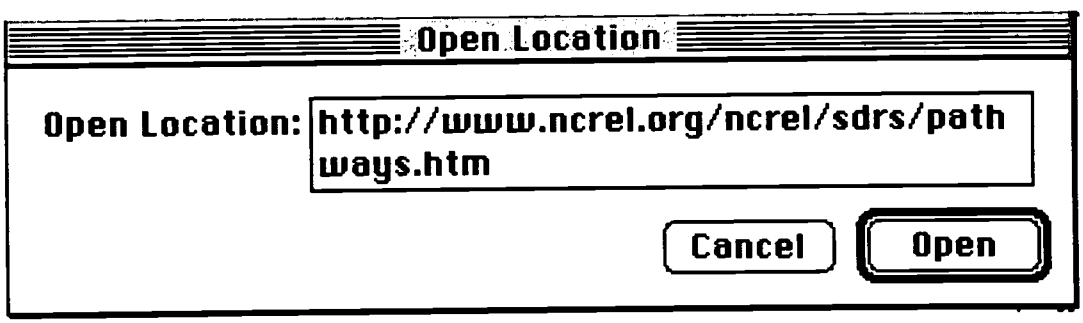
All browsers perform similar actions, but to varying degrees. The instructions below refer to Netscape because it is the most widely used browser for Macintosh and personal computers. However, you will find similar commands in any browser.

You can find World Wide Web sites in two ways. If you are looking for information about a particular topic, you would use an Internet search tool to find appropriate sites. If you already know the address of the site you wish to access, you can enter the information in your browser. When you find a valuable site, bookmark the address for future reference.

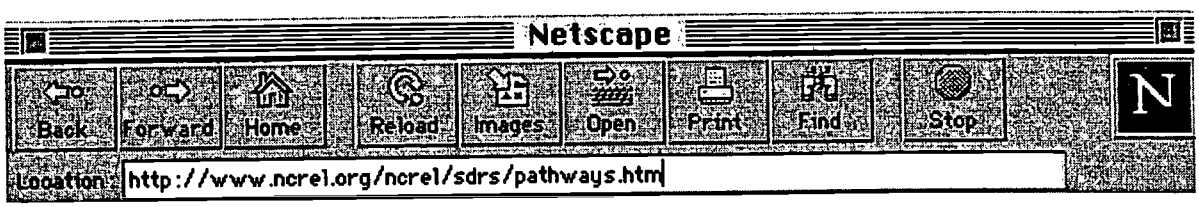
When You Know the Address

If you have a World Wide Web address from an article or resource book, you can go directly to that address by typing it at the "Open Location" command or in the "locator bar." For example, to go directly to the *Pathways to School Improvment* Internet server you would type "http://www.ncrel.org/ncrel/sdrs/pathways.htm" as shown below.

Open Location command:

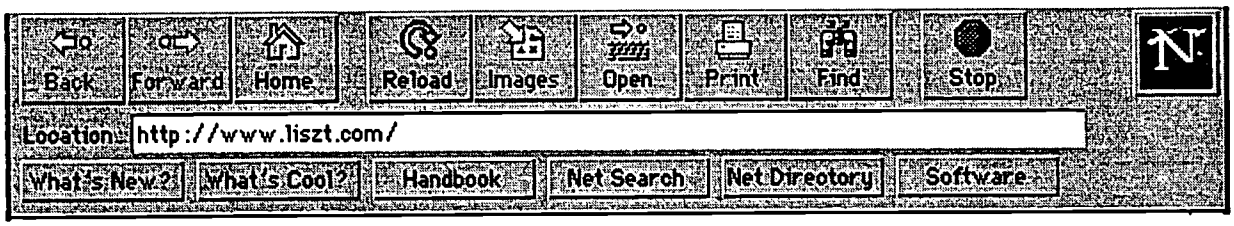


Location bar in browser:

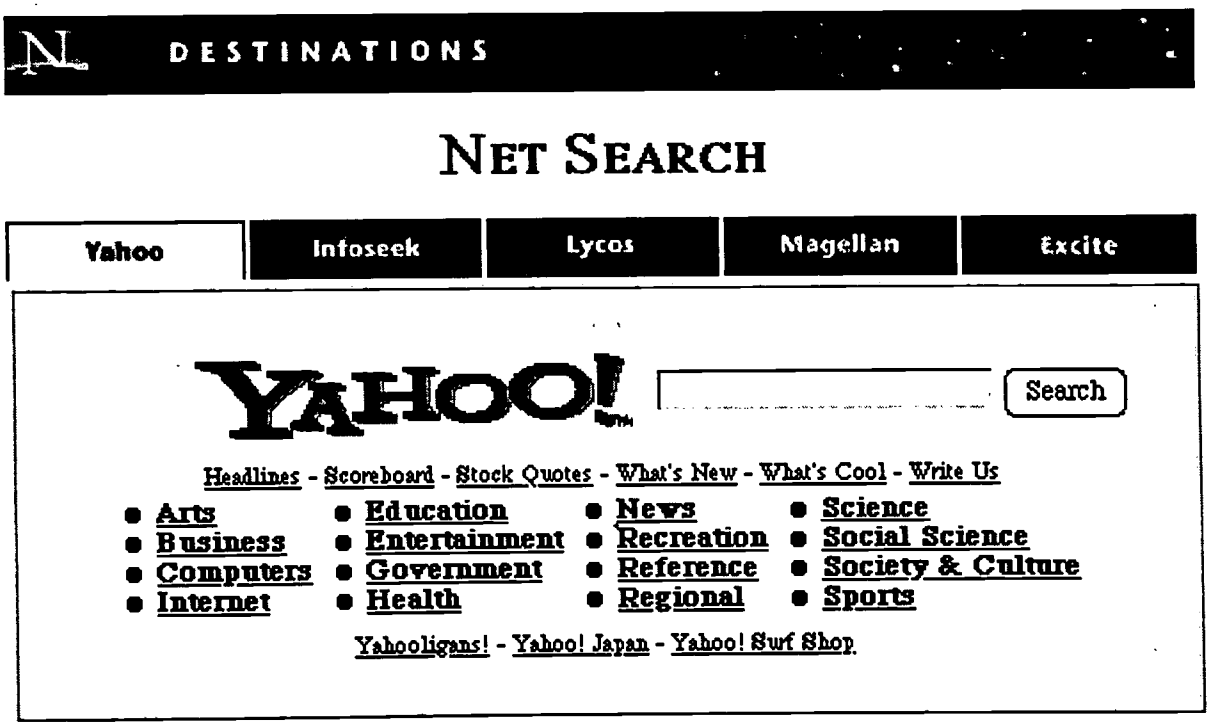


Searching for Web Sites

Most Internet browsers let you search for information on a particular topic. For instance, there is a Net Search button in Netscape that you click on to get to the search engines.

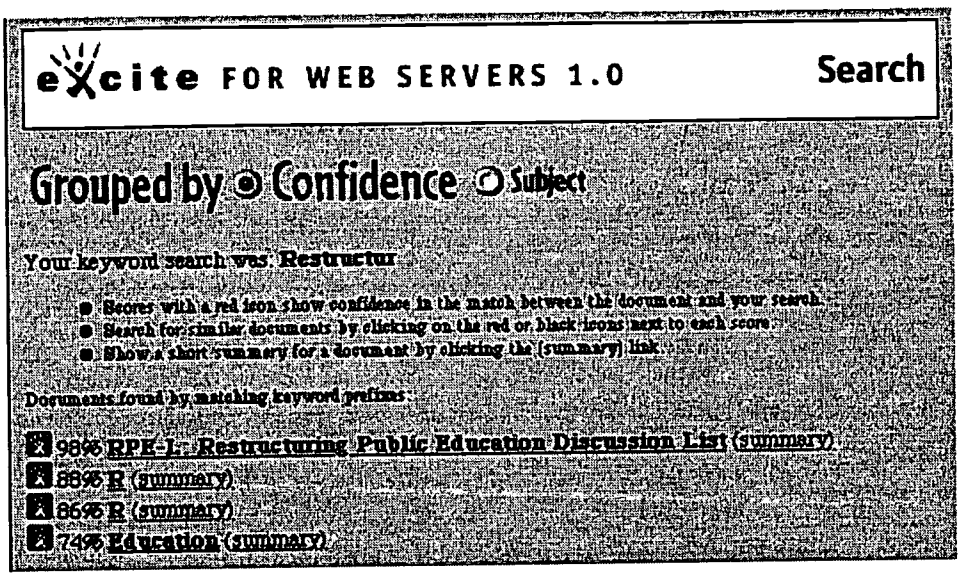


There are several types of search engines, each with its own method of searching and reporting. The most basic search tool for the World Wide Web is the **directory.** Directories list Web sites by categories, with each category divided into a number of subcategories. The most widely known directory is **Yahoo.** Most directories now also contain a search tool that allows you to search by keyword. Yahoo is located at **http://www.yahoo.com/** or it can be found in Netscape by clicking on the **Net Search** button.



More Search Engines

Excite at http://www.excite.com



Lycos at http://www.lycos.com/

When you conduct a search, the results can look like the two screens below.

Sites 1 - 10 (of 1854 in this topic):

- **AAAS Project 2061**
  The American Association for the Advancement of Science's reform initiative for K-12 education to make all high school graduates science literate. (*See also* Similar Pages)

- **Alternative Higher Education Network**
  AHEN provides a forum to discuss, assess and create alternative higher education programs. List of member institutions. (*See also* Similar Pages)

- **Arkansas Crusades**
  Arkansas teachers working to improve math and science education. (*See also* Similar Pages)

---

1 - 10 (of the best 120872):

Restructuring

--

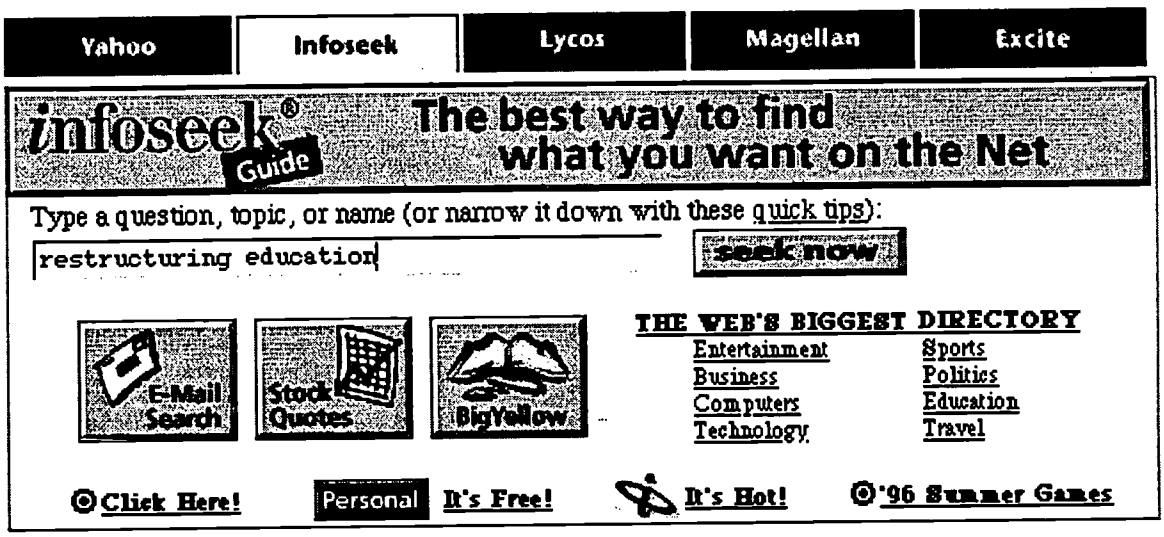
http://[illegible]
(Score 56, Size 1K)
Please note that some of these information files require Adobe Acrobat Reader to be resident on your computer. You may download a FREE copy of Acrobat Reader directly from Adobe. . Restructuring (*See also* Similar Pages)

Some search engines also provide a list of related topics to aid in your search.

Related topics:

- School administration
- Vocational education
- Education reform
- For teachers
- Teacher education
- K-12 schools
- Instructional technology

InfoSeek (http://guide.infoseek.com) is another helpful search engine.



Another type of search tool is the index, which uses automated programs that follow the hyperlinks found on a Web page to other pages, moving through an enormous number of Web sites. As they go, they create a database of keywords from each Web page they encounter. The databases are searchable. These tools are also known as Web crawlers. One of the most popular index search tools is Alta Vista, which examines almost 2.5 million Web pages daily.

AltaVista is located at **http://www.altavista.digital.com/** or it can be found on the Net Search page in the Netscape browser.

A third type of search tool is the meta-searcher. Because there are so many ways of organizing information found on Web pages, no one directory or index can be identified as the best for all searches. A tool called a meta-searcher has been developed to search multiple directories and indices at the same time. One example is the MetaCrawler at the University of Washington. The disadvantage of a meta-searcher is that the list returned contains only the top ten hits from each of the directories and indices used.

MetaCrawler is located at **http://metacrawler.cs.washington.edu:8080/index.html**.

Because each type of search tool is structured differently, results on the same search criteria may vary. Try using different tools to determine which format you like best and which gives the best results for a particular search.

Other Tips and Strategies for Using Search Engines

Keywords. Keywords are simply the words you choose for your search. But to be effective, keywords must be chosen carefully. Keywords will usually return a large number of hits. If you want to limit the number of hits, try a Boolean Operator search.

Boolean Operators. The Boolean Operators "and," "or," and "not" help limit searches to specific topics. For example, the word "telecommunications" will result in a large number of hits. If we want to know specifically about telecommunications in schools in science, we might try this search:

telecommunications *and* schools *and* science

This search will yield only those pages with all three limiters. In contrast, the following search will yield all pages containing any one of those terms:

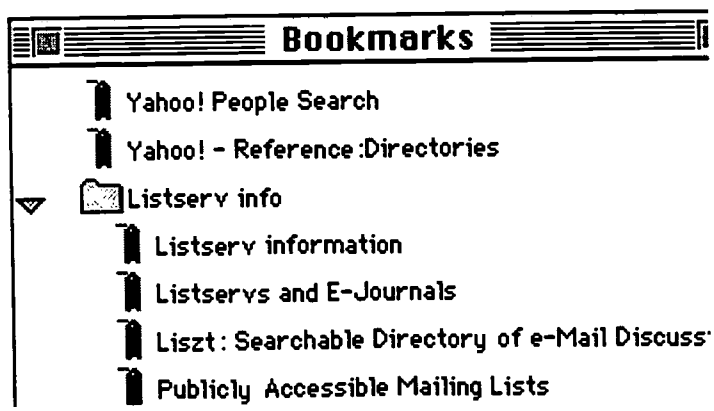
telecommunications *or* schools *or* science

Some search programs substitute plus or minus signs for "and" and "not." Because each search program is different, you may need to check the directions for the search tool you use. There is usually a **Help** button available on each search tool's Web page.

Bookmarks

Once you've located a resource, it is worth saving for future reference. Most Web browsers offer bookmarks as a tool for saving directions to a particular location.

If you are browsing the Web with Netscape and come across a site you'd like to return to, select **Add Bookmark** under the **Bookmark** menu. Your list of bookmarks will allow you to return to a site without remembering or typing the long address correctly. All you need to do the next time you want to return to that site is to select its bookmark. Your browser will automatically return to the site selected.



Error Messages and Other Problems

Occasionally clicking on a link to a Web site produces an error message. It could simply be that the site is busy and you'll need to try again later. Or it could mean that the site's address has changed and no forwarding address was left. (If a forwarding address is available, be sure to bookmark it.) In any case, don't become discouraged. There are usually many sources for you to try.

If you have entered the address yourself and you receive an error message, first check your typing. Addresses must be exact or they will not work! Occasionally printed sources (periodicals, newspapers, and others) make mistakes also, and the error is theirs, not yours.

If you really want to find a source and the address just isn't working, you can shorten the address to its main part (root directory) and begin at that Web site, making selections to try to find what you are looking for. For instance, if you have difficulty with http://www.ncrel.org/ncrel/sdrs/pathways.htm, try just the first part: http://www.ncrel.org. Then make selections from that window to try to locate the specific information you are seeking.

If your browser locks up, don't panic! Try a **Force Quit** before you do anything drastic. On your Macintosh, hold down the **Command, Option,** and **Escape** keys all at once. In some instances you can **Cancel** the **Force Quit** at this point and it will unfreeze your browser. On your PC try the **Control** and **Break** keys. In more severe freezes, you may need to actually do the **Force Quit** or even a warm boot (**Command-Control-Restart** on your Mac and **Control-ALT-Delete** on your PC) to get going again. If you must warm boot the computer, you will have to reconnect to the Internet to resume where you left off. In any case, save information frequently that you want for future reference.

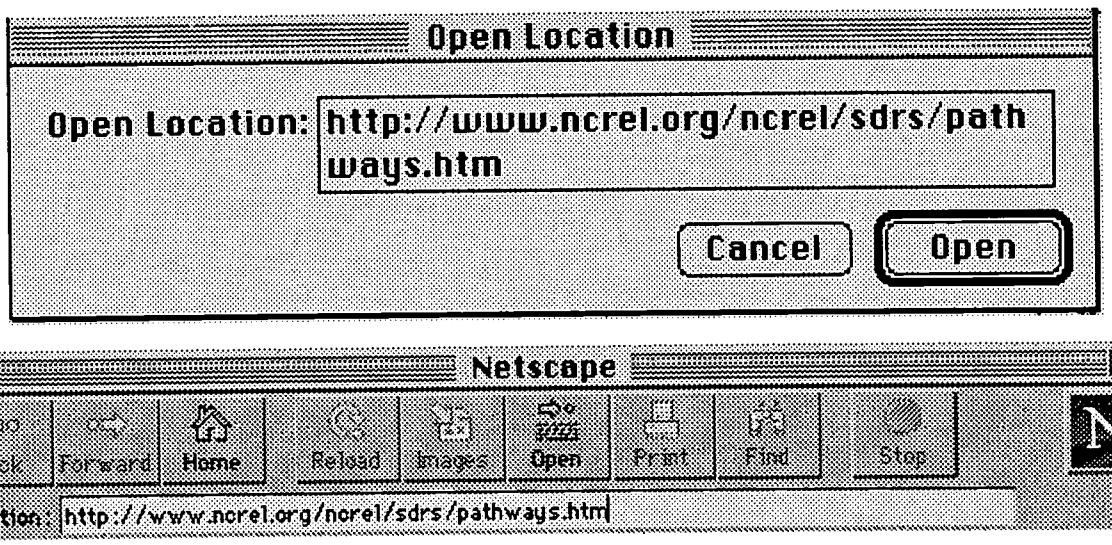
Step-by-Step Guide to the *Pathways to School Improvement* Internet Server

Step-by-Step Guide to the *Pathways to School Improvement* Internet Server

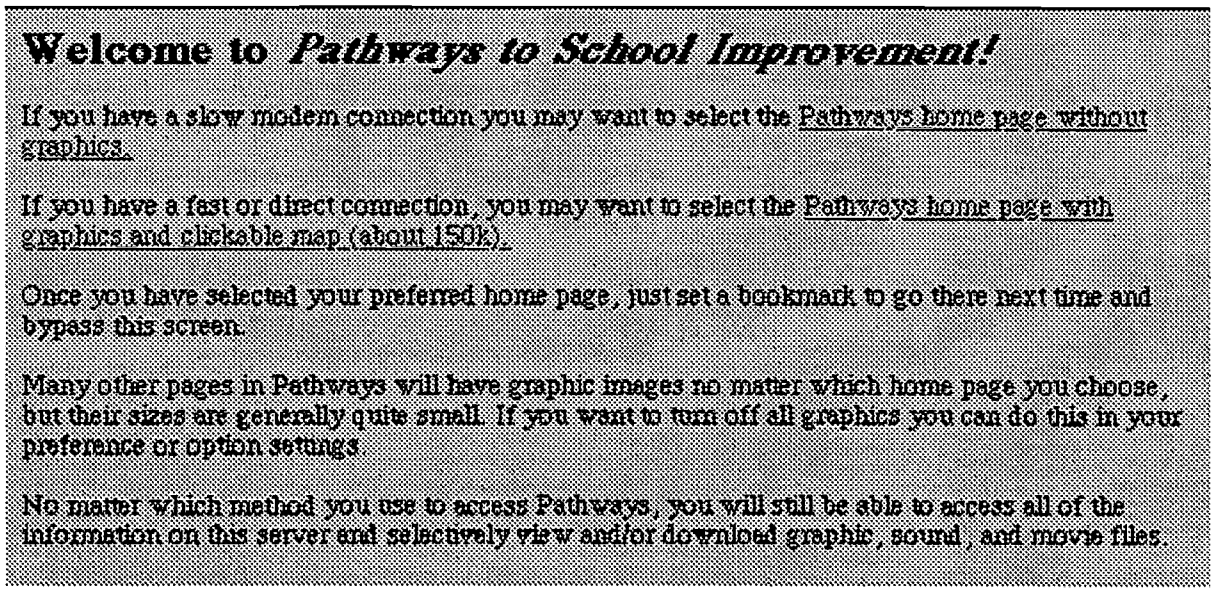
NCREL's *Pathways to School Improvement* Internet server offers easy-to-find, concise, research-based information on school improvement. The *Pathways* server provides the best information on a variety of topics, including: assessment, at-risk children and youth, goals and standards, governance and management, leadership, learning, literacy, mathematics, parent and family involvement, professional development, safe and drug-free schools, school-to-work transition, science, and technology.

You can reach the *Pathways* server with any World Wide Web browser. At the **Open Location** menu command or in the **Location** bar (both shown below), type in the following address:

http://www.ncrel.org/pathways.htm



The window that opens (shown below) gives you the option to view the *Pathways* home page with or without graphics. If you have a slow connection, select the option that displays the home page without graphics. Otherwise, select the home page with graphics to take advantage of the clickable map.



Welcome to *Pathways to School Improvement!*

If you have a slow modem connection you may want to select the Pathways home page without graphics.

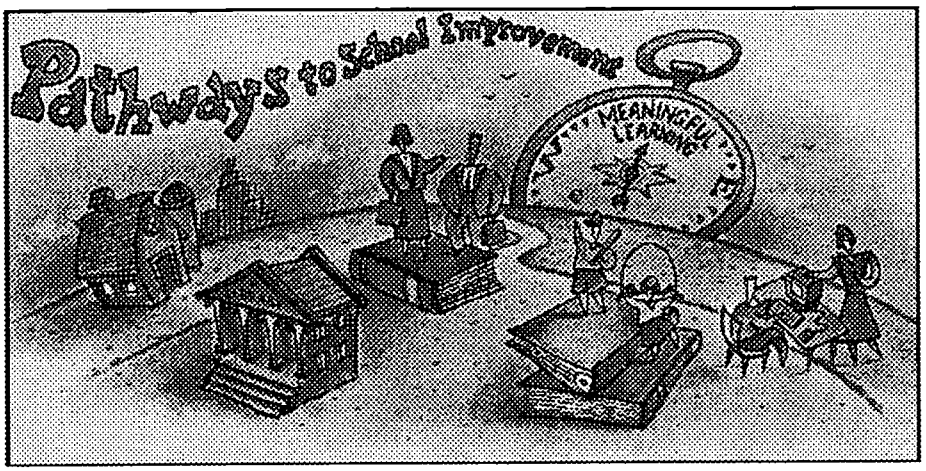
If you have a fast or direct connection, you may want to select the Pathways home page with graphics and clickable map (about 150k).

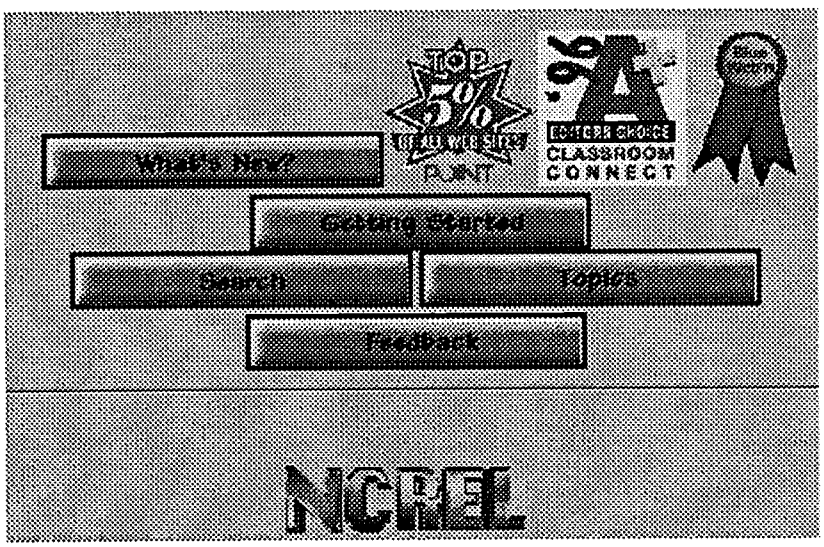
Once you have selected your preferred home page, just set a bookmark to go there next time and bypass this screen.

Many other pages in Pathways will have graphic images no matter which home page you choose, but their sizes are generally quite small. If you want to turn off all graphics you can do this in your preference or option settings.

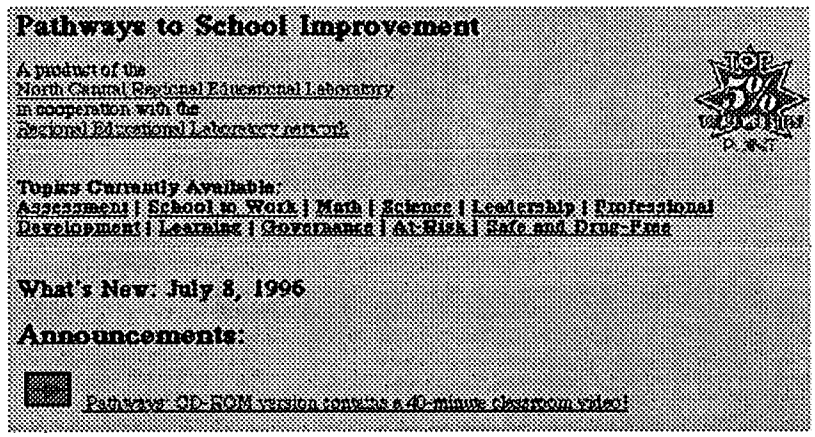
No matter which method you use to access Pathways, you will still be able to access all of the information on this server and selectively view and/or download graphic, sound, and movie files.

Selecting the page *with graphics* gives you the following screen:





The page *without graphics* looks like this:



Pathways to School Improvement

A product of the
North Central Regional Educational Laboratory
in cooperation with the
Regional Educational Laboratory network

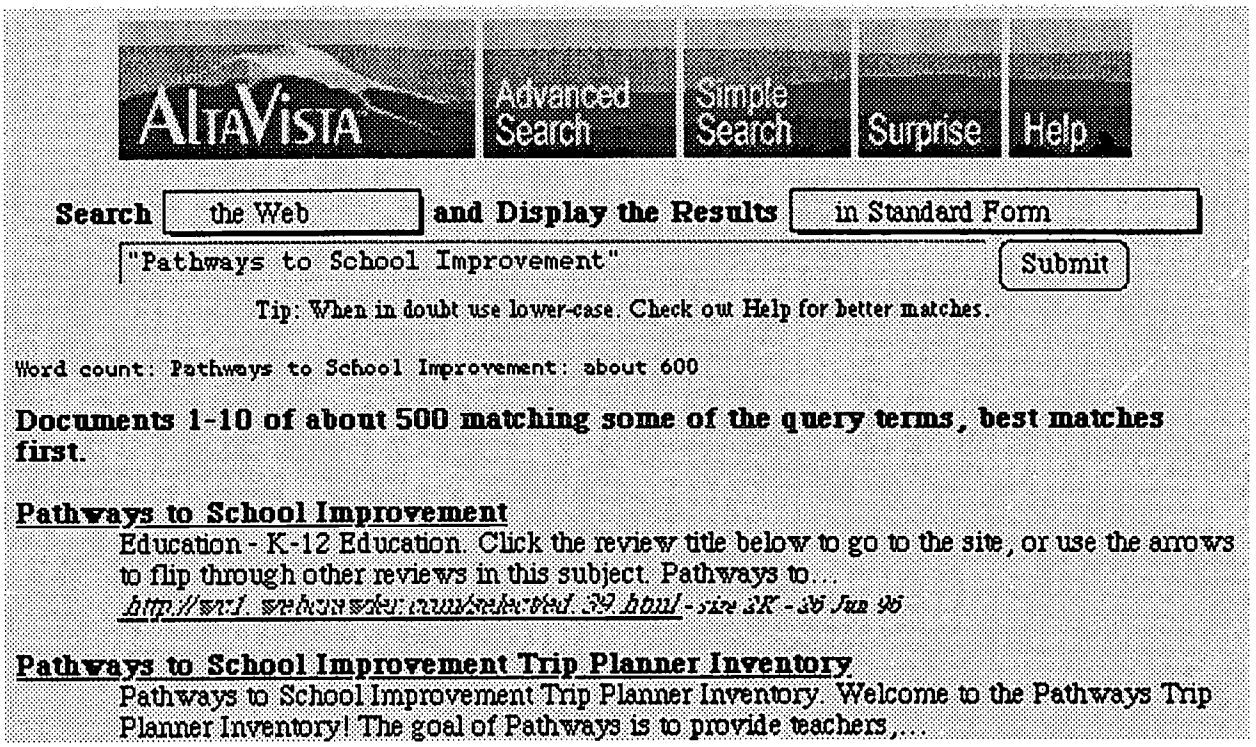
Topics Currently Available:
Assessment | School to Work | Math | Science | Leadership | Professional Development | Learning | Governance | At-Risk | Safe and Drug-Free

What's New: July 8, 1996

Announcements:

Pathways' CD-ROM version contains a 40-minute classroom video!

If you cannot remember the address—or URL—you can always use a browser's search tool to find the *Pathways* home page by searching for "Pathways to School Improvement" as shown below.



Getting Started

Once the *Pathways* screen is on your computer, you can begin by clicking on the **Getting Started** button or menu item. This will take you through instructions for using the site most efficiently. You may take side trips to look at examples of the information given. You can return to the menu page by clicking the **Back** button. After scanning the **Getting Started** page, you may wish to explore the other options on the main menu, including **Topics, What's New,** and **Search**. Be sure to add this site to your **Bookmarks** file for future reference. When you have finished exploring the *Pathways* site, you can leave information for the NCREL staff by clicking on the **Feedback** button.

Step-by-Step Guide to Finding and Participating in Listservs

Step-by-Step Guide to Finding and Participating in Listservs

Listservs (also called discussion groups or mailing lists) provide an opportunity for people with similar interests to stay in touch and share ideas, like a virtual teachers' lounge. Participants use e-mail to communicate. Because of the popularity of this technology, people can now choose from more than 54,000 groups.

E-mail by itself allows one person to communicate with another. Listservs allow one person to communicate with many by sending the message through one address. Every subscriber of that listserv will receive a copy of the message. Many listservers store past messages and make them available to subscribers. People interested in joining the listserv or discussion group must subscribe to be a member.

Where and How to Locate Lists

Using Gopher. You can use Gopher software (e.g., *TurboGopher*) to access text-based resources on the Internet. A "Veronica" search through Gopher using the word *listserv* can be used to find out what listservs are available. You can also try a Veronica search on a topic of interest, such as music or education. Such a search may result in more leads to follow than would be practical, but some of them may be listserv references. Select a few that look promising. (Caution: Many Gopher references will be outdated.) If you wish to subscribe, send an e-mail message to the listserv you wish to join.

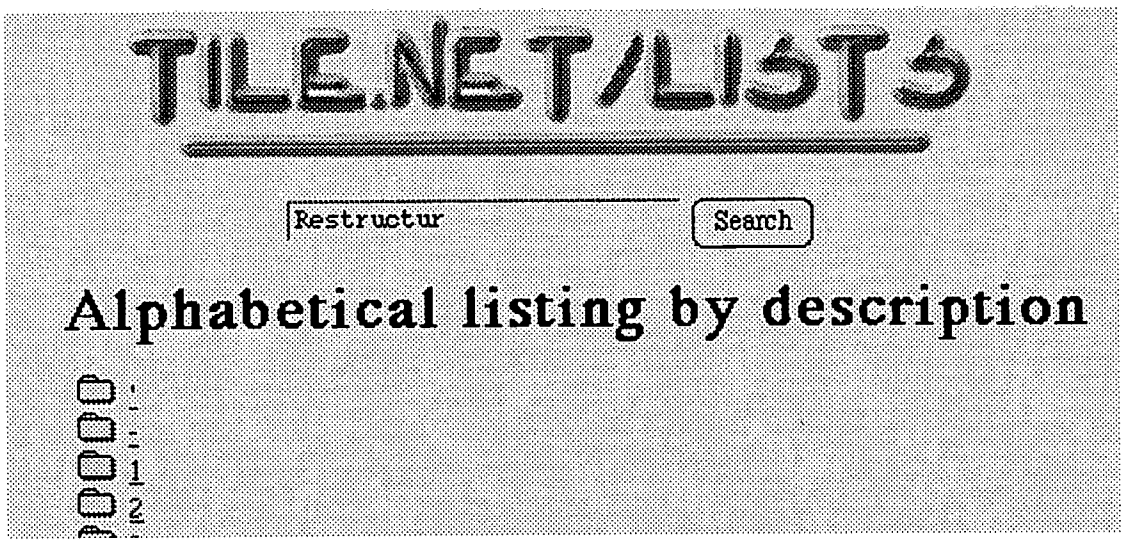
One source for finding listservs is the NCREL site. Using your Gopher software, select "Another Gopher" or "New Gopher" from the "File" menu and type in the following address: **gopher.cic.net**. Then select items as follows in successive windows: *Other, CICNet Projects and Gopher Servers, K-12, Mailing Lists (listservs)*.

If you don't have Gopher software, you can access the same list by selecting "Open Location" from the "File" menu of your WWW browser (e.g., Netscape). Type **gopher://gopher.cic.net** and follow the steps listed in the paragraph above.

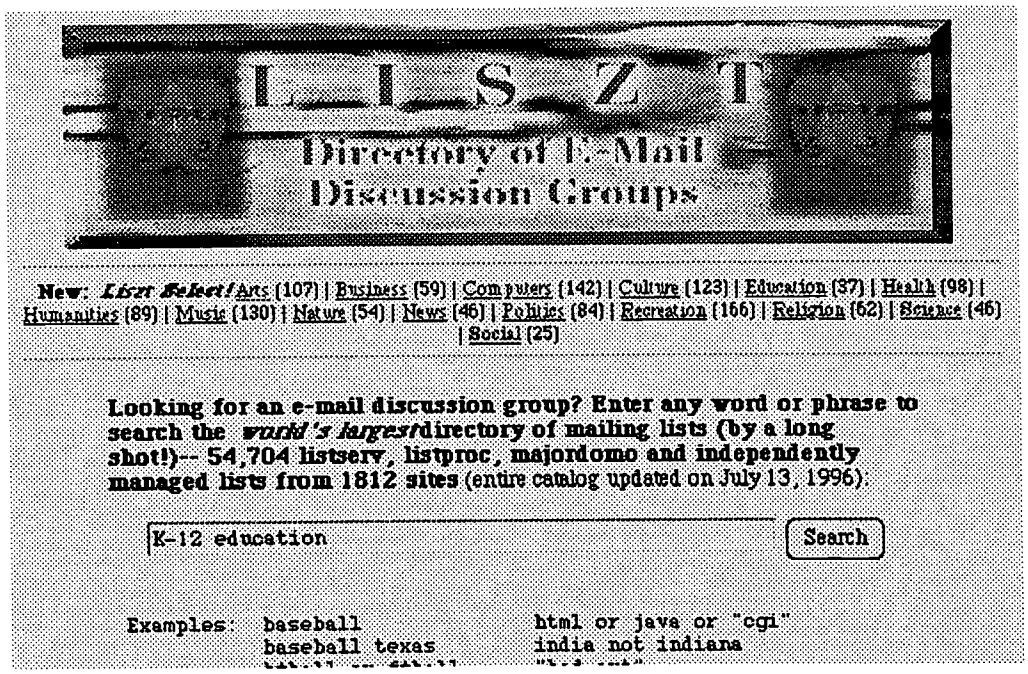
Through the World Wide Web. With access to the World Wide Web, every browser has some search capabilities. In Netscape, for example, there is a Net Search button that will bring you to a page with many choices of search tools. Again, search on the word "listserv" and you will find several lists available. Click on any of these to get more information.

In your World Wide Web browser there is a place to type in an address, or URL, to go to a WWW page directly. Some listserv addresses are provided below.

Going to **http://tile.net/listserv** will give you:

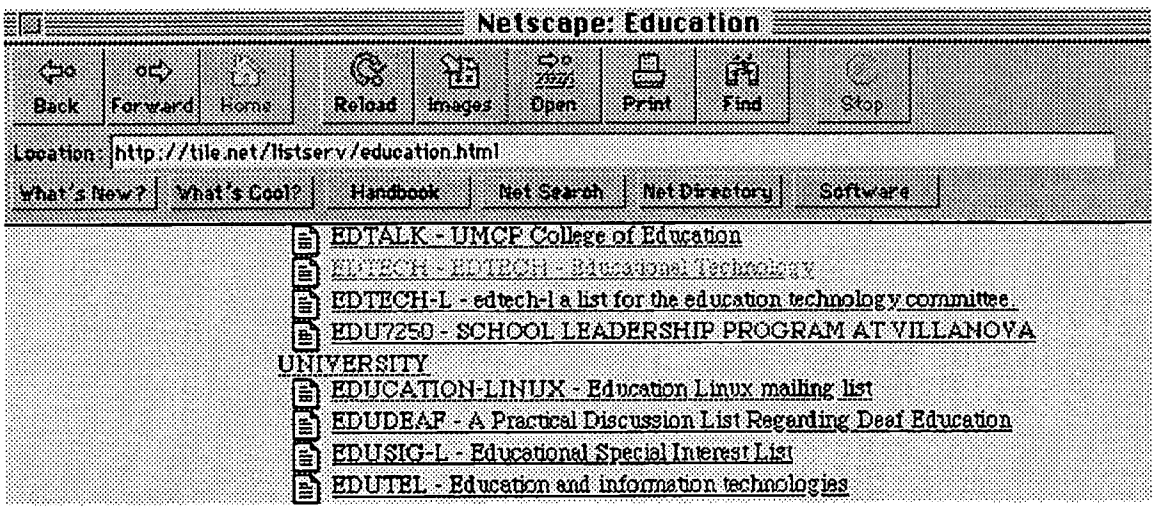


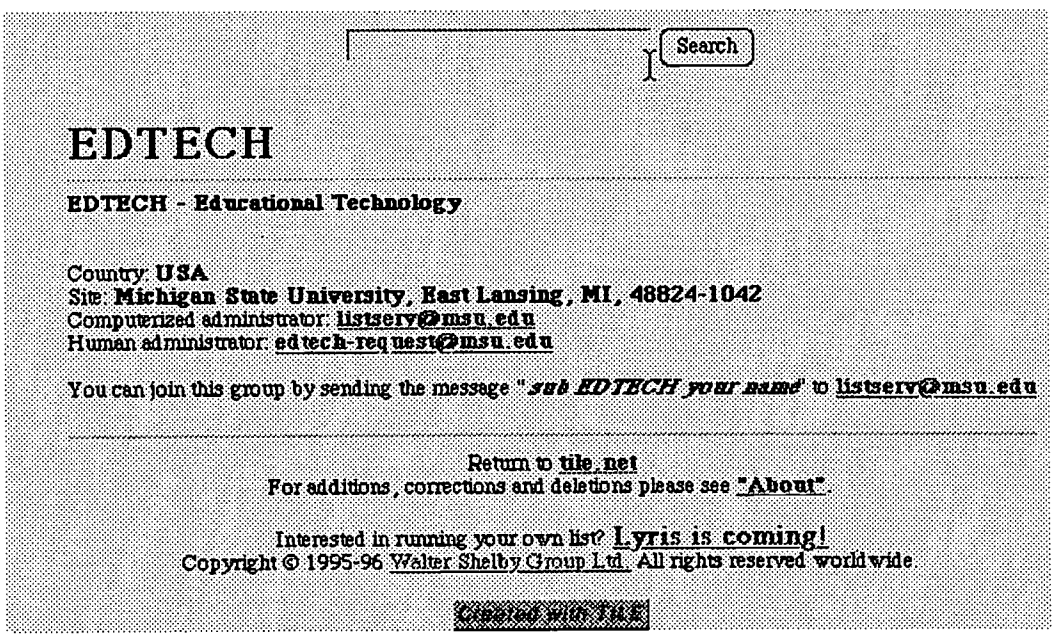
There are several lists of listservs available. If you type in the address **http://www.liszt.com**, you will find the following:



Other places to find lists of listservs include **http://www.neosoft.com/internet/paml** and **http://www.randomhouse.com/tid**

Many lists allow you to browse alphabetically or to do a search for a particular topic. Once you have a list of possible listservs, select one entry; for example, EDTECH.





In some browsers, if you click on the hypertext name of the list, you will get more information regarding that particular listserv. In this example, if you click on the address given to join (subscribe), the mail window will open automatically, allowing you to send the e-mail message necessary to add your name to the listserv.

General Tips on Subscribing and Unsubscribing

There are several types of listserver software, but they all accomplish the same task—distributing mail to all subscribers of the listserv group. There are two to three very important addresses for each listserv: the subscription, the participation, and the person coordinating that particular listserv. It is very important that you send mail to the appropriate address.

Messages sent to a listserv subscription e-mail address are usually received by an automated server with no human contact. It is important to follow instructions carefully, as the server cannot interpret what is sent to it if it is not done accurately. You also must send your subscription request from the e-mail address you want the mail sent to. (If you change e-mail addresses, it is necessary for you to unsubscribe your old address and subscribe your new address.)

Three different types of software are used to create listservs: listserv, majordomo, and listproc. The steps for subscribing to each type are described below.

Listserv discussion group. To subscribe, send an e-mail message to the subscription address (listserv@HOST NAME; for example, listserv@msu.edu) with the following message:

subscribe {list name} {first name, last name}

Do not include the brackets in your message. For example, to subscribe to the EDTECH listserv, you would type the following message:

subscribe EDTECH John Doe

Majordomo discussion group. To subscribe, send an e-mail message to the subscription address (majordomo@HOST NAME; for example, majordomo@unr.edu) with the following message:

subscribe {list name} {e-mail address}

Do not include the brackets in your message. For example, you might type:

subscribe galileo jdoe@internet.com

Listproc discussion group. To subscribe, send an e-mail message to the subscription address (listproc@HOST NAME; for example, listproc@artsedge.kennedy-center.org) with the following message:

subscribe {list name} {first name, last name}

Do not include the brackets in your message. For example, you would type:

subscribe K12ARTSED Joe Doe

You will receive a message from the listserver acknowledging receipt of your subscription. It is a good idea to keep a copy of this message, as it usually contains instructions for posting messages and unsubscribing from the list.

Getting the Most out of List Participation

The Internet is not just a place to receive information; it is also a place to contribute information. After observing messages from a listserv, join in—share your ideas, make suggestions, ask questions, and wait for responses to your messages.

In case you are reluctant to have your message broadcast to a whole group, you can respond directly to the individual who posted that message by addressing it to that individual's e-mail address. Many people feel more comfortable communicating this way at first.

Netiquette for List Participation

Be courteous in all your communication. Because there is no face-to-face contact in a listserv, it is important that you carefully select your words so as to not offend members of the list. Using all capital letters is considered to be SHOUTING, so stick to lowercase letters unless you are trying to SHOUT!

Be sure to use the correct address. The address used to subscribe and unsubscribe is not the same as the address to communicate with the group. Keep a copy of the message received acknowledging your successful subscription to a list as it contains specific instructions on how to unsubscribe when necessary.

Observe for a while before contributing to the list. Observing before contributing gives you an opportunity to evaluate the group before communicating. This practice may save you the embarrassment of receiving messages from group members criticizing you for not following the list's format.

Don't respond to every message posted. It is not necessary to respond to every message received with an "I agree" or "Me, too!" If everyone sent that type of response, e-mailboxes would be filled with time-consuming nonessential messages, leaving little time for the important ones. If you are compelled to send this type of message, send it to the original sender only and not to the whole listserv.

Keep your e-mail address current. If your e-mail address changes, unsubscribe the old e-mail address and subscribe using the new address.

Tips on List Management

Listservs vary greatly in the amount of traffic generated. It is a good idea to begin with one list at a time to gauge the time involvement. Some lists generate hundreds of messages a week, others only a few. It may be helpful to determine if your lists allow you to put your mail on hold while you are on vacation, or you may be overwhelmed on your return to your e-mail.

Read and delete your messages regularly. It may be helpful to create a mailbox or folder in your e-mail program to hold those messages that you would like to save. You should certainly save the instructions for unsubscribing to that particular listserv. Some people find it helpful to create a mailbox or folder for all of their listserv instructions.

LEARNING WITH TECHNOLOGY

Guide for Evaluating Software

Guide for Evaluating Software

1. Title: _____ Producer: _____
2. Cost: _____ Multipack and site licenses available: _____
3. Platforms supported: DOS _____ Macintosh _____ Windows _____ Other _____
4. System requirements: _____
5. Age/skill level appropriate: _____
6. Educational objective: _____
   _____
7. Learning skill addressed by software content: _____
   _____

8. Peripherals supported:
   _____Printer
   _____Color printer
   _____Video input from video camera, digital camera, VCR
   _____Audio input from microphone, recorder
   _____CD-ROM
   _____Scannertext and graphics
   _____Probes
   _____Sensors
9. Mode of use:
   _____Single user
   _____Small group collaboration
   _____Large group collaboration
10. Type of software:
    _____Drill and practice
    _____Content specific
    _____Generic productivity tool
    _____Communication tool
    _____Problem solving
    _____Decision making
    _____Product creation
    _____Research tool
    _____Simulation
    _____Collaborative project design
    _____Programming
    _____Authoring
    _____Teaches students to use tools that create new tools
11. Level of interactivity:
    _____Files can be exported/imported.
    _____Files can be shared concurrently.
    _____Files can be transferred across the network.
    _____Many students can use the program simultaneously across the network.
    _____Students can collaborate on a project simultaneously across the network.
    _____Voice, video, and data are shared across the network.

12. Data use from other sources:

    Reads files in a variety of formats:

    _____Text/print
    _____Graphics
    _____3D
    _____Audio
    _____Video
    _____Virtual reality

    Reads data from:

    _____Disk
    _____Network
    _____CD-ROM
    _____Optical storage devices

13. Designed for engaged learning:

    _____Provides challenging tasks, opportunities, and experiences
    _____Students learn by doing
    _____Provides guided participation
        ____Socratic questioning
        ____Intelligent tutoring
        ____Diagnosis and guided analysis of errors
        ____Customizable for students based on learning styles, content, interests
    _____Capacity to provide just enough, just in time
        ____Nonlinear learning and thinking
        ____Multiple points of entry
        ____Designed for users with different levels of expertise

14. Content:

    _____Is accurate.
    _____Is free from gender bias.
    _____Is free from ethnic bias.

15. Ease of use:

    _____Is user friendly.
    _____Commands are intuitive.
    _____Effective help is available in the program.
    _____Speed of processing and operability is adequate.
    _____Student controls access to program resources as needed.
    _____Screens are pleasing and functional.
    _____Manuals and guides are complete and easy to use.

16. Available training and support:

    _____Quality support available from producer.
    _____Local support is available.

17. Local curriculum match rating–1(low) to 5 (high):_____

18. Overall quality rating–1(low) to 5 (high):

    _____

19. Recommendations:

    _____Highly recommend
    _____Recommend with modifications
    _____Would not recommend

20. Comments: _____

    _____
    _____
    _____
    _____
    _____
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    _____
    _____

Planning Tools

Learning Actions

Learning Actions are processes or behaviors all learners engage in across learning situations. Use them to help plan your lessons so that you can ensure your lessons support the kinds of actions you and your students consider important for the lesson goals, topics, and content. You will probably note that in many cases the actions overlap, and you may not agree with some of our labels. However, it is important not to become entangled in definitions or attempts to draw fine distinctions among the actions. Rather, use this list as a reminder of the *types* of learning actions that promote engaged and worthwhile learning.

Build Knowledge and Skills

- *Explore and Collect Information* (Students browse, search, explore, and obtain information from around the world.)
- *Make Connections* (Students make connections to prior knowledge and experiences.)
- *Retain Information* (Students deliberately remember information, ideas, strategies, and skills.)
- *Reflect and Reason, Analyze Information, and Evaluate Information* (Students ponder issues, problems, and ideas; deliberate; reason inductively and deductively; draw conclusions from evidence; chart, compare, examine, perform statistical analyses, and look for inconsistencies to reach conclusions, make decisions, solve problems, and plan and execute experiments; and judge the value of information.)
- *Manipulate and Organize Information* (Students summarize, transform, and convert information; and organize information logically in order to remember, analyze, and discover existing, new, or different relationships within and across disciplines.)
- *Appreciate* (Students develop and use aesthetic sense and abilities.)
- *Exercise Appropriate Habits of Mind* (Students recognize that different attitudes and habits of mind are appropriate for different learning issues and tasks — for example, students suspend some beliefs about what is real when reading literature, assume a critical stance when examining scientific data, and seek multiple points of view when discussing historical events.)
- *Observe Models and Imitate and Practice* (Students observe adults and more capable peers performing skills, imitate skills, and practice skills in both isolated and integrated situations.)

Learn Independently and With Others

- *Work Independently, Cooperatively, and Collaboratively* (Students work independently, cooperatively, or in collaboration with others within and beyond the classroom and school, sharing resources, ideas, and tasks as appropriate.)
- *Assume Roles* (Students take on special roles in problem solving and other situations.)

Demonstrate Knowledge, Ability, and Creativity

- *Create* (Students produce original art, music, dance, theatrical works, and writing.)
- *Perform* (Students perform musical, theatrical, literary, and other works and demonstrate special abilities, such as in sports.)
- *Construct Products* (Students produce reports, projects, experiments, and displays.)
- *Advise, Teach, and Persuade* (Students give advice, explain concepts and skills, generate novel examples and metaphors, compare and contrast, make generalizations, and present arguments.)
- *Control* (Students control variables in order to make something happen, discover relationships, or demonstrate something.)

Manage Learning

- *Set Goals and Define Problems* (Students set goals and define problems related to their own learning based on their knowledge of themselves and the way they learn.)
- *Oversee* (Students manage their own learning, make and implement plans, manage data, manage and monitor projects, and revise plans and products.)
- *Reflect and Ask Questions* (Students think about what they are learning and doing, and ask questions based on their reflections to improve their learning.)
- *Evaluate Self and Others, Get Evaluated by Others, and Make Judgments* (Students assess themselves and others; are assessed by teachers, other adults, and peers; and evaluate materials, tasks, lessons, and products.)

Learning Actions—Engaged Learning

This chart shows relationships between four categories of learning actions and indicators of engaged learning. (A more detailed list of learning actions is given on the two pages preceding this one.) The chart can be used in two ways. First, it can help you plan lessons that promote engaged learning. Second, it provides a way to evaluate existing lessons to determine how well they promote engaged learning. Note: The term "lesson" refers to a complete and cohesive unit of instruction, from a 30-minute unit to an entire course or set of related courses.

Learning Action	Engaged Learning Indicators	Guiding Questions	Technology
Build Knowledge and Skills	Student as explorer	How will the lesson help students discover concepts through interacting with the world?	**Example:** Students use Internet Web sites to gain access to current information.
		How will the lesson encourage students to construct knowledge in deep and meaningful ways?	•
	Student as cognitive apprentice	How will the lesson enable students to observe and apply practitioners' thinking skills?	•
Learn Independently and With Others	Teacher as facilitator	How will the lesson demonstrate the value of diversity and multiple perspectives?	**Example:** Students join a listserv to interact with experts and other students.
		How will groups that fit the purpose of the lesson be formed?	•
		How will groups reflect the diversity of the class?	•
	Teacher as guide	How will you help students construct their own meaning?	•
		How will you guide students as they solve problems, do authentic tasks, and share knowledge?	•

Learning Action	Engaged Learning Indicators	Guiding Questions	Technology
Learn Independently and With Others (continued)	Teacher as co-learner and co-investigator	How will you learn along with students?	•
	Student as teacher	How will the lesson help students teach each other?	•
Demonstrate Knowledge, Ability, and Creativity	Performance-based assessment	How will you use challenging and meaningful student experiences as a basis for assessment?	**Example:** Students create a hyperstack to show what they have learned and their conclusions about a problem.
	Seamless, ongoing assessment	How will you integrate instruction and assessment so that assessment occurs throughout instruction?	•
	Student as producer	How will the lesson enable students to create products that integrate their knowledge and skills?	•
Manage Learning	Student as self-director and manager	How will the lesson encourage students to be responsible for their own learning?	**Example:** Students use project management software.
		How will students make decisions about their learning?	•
	Performance-based assessment	How will students develop presentations and other performances that demonstrate what they know?	•
	Generative assessment	How will students create assessment criteria and tools?	•

Engaged Learning Tasks

Note: Engaged Learning Indicators for the "Tasks" variable apply to all four learning actions. Therefore, we have placed them in their own chart.

Learning Actions	Engaged Learning Indicators	Guiding Questions	Technology
Build Knowledge and Skills **Learn Independently and With Others** **Demonstrate Knowledge, Ability, and Creativity** **Manage Learning**	Tasks are authentic. Tasks are challenging. Tasks are multidisciplinary.	How will you ensure that learning tasks are connected to the real world and relevant to your students? How will you ensure that learning tasks are complex enough to require students' effort and time? How will you ensure that learning tasks draw on several disciplines?	**Example:** Students learn about and propose solutions to real-world problems using: • Videos, books, and articles to collect information. • Computers (e.g., Web sites, e-mail, and listservs) to communicate with experts. • Simulation software to observe phenomena. • Spreadsheets to enter and analyze data. • Word processors to take notes and generate ideas. • Project management software to manage complex work groups. • Chat rooms to talk with students in remote settings. • Hypertext to prepare multimedia reports.

Examples of Technology Use

The purpose of this tool, which begins on the next page, is to provide examples of both familiar and new or extended technologies for each learning action shown in the first column. The first column also contains questions for each action to keep you focused on engaged learning. Thus, this chart overlaps somewhat with the Learning Actions–Engaged Learning chart although it is organized differently.

Familiar technologies include tools such as books, magazines, lab equipment, calculators, videos, and transparencies. *New and extended technologies* include tools such as the Internet, e-mail, and digital cameras. After you become familiar with some of the new technologies, you may not need to refer to the chart and examples as frequently. Or, you may wish to add some of your own examples to the list. Remember, our list is not exhaustive.

Note: Many technologies can be used to enhance more than one learning action. In addition, any technology can be misused or used inappropriately. For example, students can easily copy information they find on the Internet to use in a report, just as they used to copy information directly from an encyclopedia. Always remember that your role as a teacher is more important than which tools students use.

Build Knowledge and Skills *Explore and Collect Information*	What technologies will you use and how will you use them?	
	Familiar	**New or Extended**
Students browse, search, explore, and obtain information from around the world. **Engaged Learning Questions** • How will you guide students to seek a sufficient number of sources of information? • How will you ensure that students explore worthwhile information? • What strategies could students use so that their search is systematic rather than random and that the information they find is what they need?	• Browse in libraries. • Read, skim, or study books, encyclopedias, and other print materials. • Visit museums. • Talk to experts and friends in person or on the telephone. • Attend conferences and participate in special interest groups. • Listen to audiotapes. • Explore microfiche for newspapers and other archives. • • • • •	• Interact with CD-ROMS and laser disks. • Explore Web sites bookmarked by the teacher. • Write to experts and friends via e-mail. • Explore databases. • Listen in on listservs, then join the appropriate ones. • Use probeware to collect data. • Look at FAQs on Web sites. • Explore question/answer Web sites (e.g., Ask Mr. Science). • Conference on the Internet. • Visit museums online. • •

Build Knowledge and Skills *Make Connections*	What technologies will you use and how will you use them?	
	Familiar	**New or Extended**
Students make connections to prior knowledge and experiences. **Engaged Learning Questions** • How will you ensure that concepts and tasks are authentically related to students' prior knowledge and experiences? • How will you help students tap their prior learning and experiences? • How will you guide students to confront and overcome their misconceptions?	• Brainstorm with a flip chart and markers. • Create a K-W-L chart. (Students identify what they KNOW about a topic, determine what they WANT to know about the topic, and then summarize what the LEARNED about the topic.) • Review past learning and write it on the chalkboard. • Talk about similar and familiar situations and ideas. List them on a flip chart. • Categorize ideas, jot them on note cards, then connect the cards the way ideas seem to go together. • View videos and movies to activate prior knowledge about a topic. • View situations that promote cognitive conflict. • • • •	• Use brainstorming software. • Use concept mapping software. • Use storyboard software. • Create a classroom database of learning. • View CD-ROMs of familiar and new ideas of events, concepts, and issues. • • • • • • • • •

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Build Knowledge and Skills	What technologies will you use and how will you use them?	
Retain Information	**Familiar**	**New or Extended**
Students deliberately remember information, ideas, strategies, and skills. **Engaged Learning Questions** • How will you guide students to study, remember, and store important information? • What retention or storage strategies might students use? • How might you model the use of retention and storing strategies?	• Take notes on note cards. • Keep a subject notebook. • Keep a journal. • Put information in special charts or graphic organizers. • Record important information using video, still-camera, or audiotape. • Photocopy materials. • Rehearse using a tape recorder. • Create a filing system. •	• Record information using a word processor. • Put information in a database. • Scan information onto a disk. •

Build Knowledge and Skills ***Reflect and Reason; Analyze and Evaluate Information***	What technologies will you use and how will you use them? **Familiar**	 **New or Extended**
Students ponder issues, problems, and ideas; deliberate; reason inductively and deductively; draw conclusions from evidence; chart, compare, examine, perform statistical analyses, and look for inconsistencies to reach conclusions, make decisions, solve problems, and plan and execute experiments; and judge the value of information. **Engaged Learning Questions** • How will you guide students to reflect on ideas related to their needs and interests and to perspectives of diverse groups? • How will you guide students to draw conclusions based on sound reasoning? • What opportunities will students have to judge the relevance of information? • How can you guide students to synthesize their work?	• Record reactions, confusions, and questions in a journal. • Form and test hypotheses, collect evidence, and do statistical analyses. • Compare and contrast theories, ideas, characters, and facts. • Apply principles and ideas in one domain to another domain and to novel situations and examine interdisciplinary issues. • Compare primary and secondary sources. • Set criteria and standards. • Use rubrics. • Develop an evaluation tool. • • • •	• Use word processing for reflection and writing. • Use simulation software to apply principles and concepts to novel situations. • Use software that promotes reflection and provides inductive and deductive reasoning questions and tasks. • Reflect with others via e-mail, listservs, bulletin boards, or chat rooms. • Use simulation software to set up simulated experiments. • Develop an evaluation tool online or by using software. • Link electronically with professional evaluators. • • • • •

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Build Knowledge and Skills *Manipulate and Organize*	What technologies will you use and how will you use them?	
	Familiar	**New or Extended**
Students summarize, transform, and convert information; organize information logically in order to remember; analyze; and discover existing, new, or different relationships within and across disciplines. **Engaged Learning Questions** • In what ways can students change the form of information? • What tasks can reveal multidisciplinary connections and important but not necessarily obvious relationships among elements? • How can you guide students to summarize and synthesize their work?	• Change measurement units (e.g., feet to miles, yards to meters). • Write stories and summarize experiences. • Act out stories and historical events. • Draw a picture or cartoon to illustrate an idea, concept, or story. • Make a timeline. • Put information into charts, graphs, or other graphic organizers. • Make an outline. • Put information in categories. • Use a calculator to change the format of data. • • • • •	• Use software to create models (e.g., Model It). • Use spreadsheet software (e.g., Microsoft Excel). • Use software to create graphic organizers, such as comparison charts and timelines. • Develop CD-ROMs or databases. • • • • • • • • •

Build Knowledge and Skills	What technologies will you use and how will you use them?	
Appreciate	**Familiar**	**New or Extended**
Students develop and use aesthetic sense and ability. **Engaged Learning Questions** • How will these experiences fit with students' interests, foster new interests, and encourage reflection? • How will students learn to respect different viewpoints regarding aesthetic experiences? • How will you guide and model appreciation without suggesting that there is only one way to understand something? • How can you guide students to critique art, music, theater, etc., based on appropriate aesthetic criteria?	• View live performances. • Read books and magazines. • Visit museums and galleries. • Look at reprints and posters. • Observe local architecture. • Attend sports events. • View slides and videos. • Listen to audiotapes and compact disks. • View laser disks and films. • View video programs. • Listen to the radio. • •	• Listen to music on CD-ROMs then read about the music or composer. • Visit art, historical, and other cultural Web sites (e.g., Smithsonian Institution, Library of Congress). • Use CD-ROMs that provide music with missing portions; play the missing portions. • Learn about museum and gallery collections or theater offerings by visiting their Web sites. • View and interact with CD-ROMs that focus on aesthetic experiences. • • • • • • • • •

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Build Knowledge and Skills *Exercise Appropriate Habits of Mind*	What technologies will you use and how will you use them?	
	Familiar	**New or Extended**
Students recognize that different attitudes and habits of mind are appropriate for different learning issues and tasks. For example, students suspend disbelief when reading fiction, look critically at scientific data, and seek multiple points of view when discussing historical events. **Engaged Learning Questions** • How will you guide students to set standards of excellence based on the habit of mind appropriate to different domains? • How will tasks reflect the real work and standards of different domains?	• Research criteria that reflect habits of mind for different domains and tasks (e.g., narrow searches for information, communicate results and seek data to support/defeat it, and act as an unbiased observer). • Talk to experts in person, by mail, or on the telephone. •	• Research habits of mind and criteria that reflect them for different domains and tasks by communicating with experts via e-mail, listservs, etc. •

Build Knowledge and Skills *Observe Models; Imitate and Practice*	What technologies will you use and how will you use them?	
	Familiar	**New or Extended**
Students observe adults and more capable peers as they perform skills, imitate those skills, and practice the skills in both isolated and integrated situations. **Engaged Learning Questions** • How will you ensure that students have good models? • How will you ensure that the skills modeled and imitated are important both in and out of school? • How will you provide feedback and guide students to get feedback from their own practice? • How will you encourage students to practice good decision making? • How will you guide students to use skills in creating and performing?	• Observe and imitate a live, skilled performance. • Work with a partner or critical friend to obtain immediate feedback. • Participate in games that promote skill practice. • Practice in authentic situations (e.g., read a book to practice reading). • Observe a skilled performance on video or listen to one on audiotape, then imitate it. • Record your own performance on video or audiotape. •	• Practice writing using a word processor. • Correspond via e-mail with experts about skills related to their field of work. • Monitor listservs to observe how experts converse and how they treat topics in their areas of expertise. • Use CD-ROMs that present a musical performance with a part left out; play that part. • Practice skills on Web sites and with software programs (e.g., Jason, Mayaquest, National Geographic KidsNetwork, or Oregon Trail). •

Learn Independently and With Others ***Work Independently, Cooperatively and Collaboratively***[2]	What technologies will you use and how will you use them?	
	Familiar	**New or Extended**
Students work independently, cooperatively, or in collaboration with others within and beyond the classroom and school, sharing resources, ideas, and tasks. **Engaged Learning Questions** • How will you guide students to be responsible for their own learning and to share tasks fairly? • Which tasks are more appropriate for independent learning? for cooperative learning? for collaborative learning? • How will you form equitable groups that meet students' needs and lesson requirements? • How can students collaborate with others who are not present?	• Write in a journal. • Read a book. • Write a paper. • Do a jigsaw activity. • Plan and carry out a major collaborative project. • Share information and ideas via mail with students and experts in remote settings; conduct projects with them. • With older students, watch and discuss management videos on teaming, paradigm shifts, and futurism. • • • • • •	• Use videoconference software (e.g., CU-See Me). • Participate in national networks (e.g., National Student Resource Center, World Classroom Telecommunication Network, and National Geographic KidsNetwork). • Collaborate online (e.g., use CoVIS Collaboratory Notebook). • Use interactive learning environments (e.g., CSILE). • • • • • • •

[2] Cooperation tends to occur when individuals assume different roles and responsibilities within or across groups. Collaboration involves sharing goals, tasks, roles, and responsibilities.

Learn Independently and With Others *Assume Roles*	What technologies will you use and how will you use them?	
	Familiar	**New or Extended**
Students take on special roles in problem solving and other situations. **Engaged Learning Questions** • How will you guide students to assume both leadership and follower roles? • How will you guide students to assume multiple roles when learning independently? • How will students get feedback on their role performance?	• Carry out various roles in a project. In a team, act as group leader, recorder, manager, peace keeper, reporter, or listener. • Participate in simulations in teams or alone. • Teach others. • Evaluate the work of others. •	• Use simulation software (e.g., VistaPro). • Participate in online, collaborative projects. •

Demonstrate Knowledge, Ability, and Creativity	What technologies will you use and how will you use them?	
Create	**Familiar**	**New or Extended**
Students produce original art, music, dance, theatrical works, and writing. **Engaged Learning Questions** • How can you ensure that the creative process is challenging and stimulating for students? • How will you guide students to create things that are based on their interests and needs? • How will you guide the creative process without suggesting that there is a right way to create something? • How will you facilitate students to support and guide each other, be a considerate audience, and provide constructive feedback? • Will students be able to collaborate on some creations?	• Use paper and pencil or a typewriter for creative composing. • Use paint, ink, scissors, silk screens, wood block, lithograph, clay, wood, metal, or stone to create visual art. • Use music scores, voice, or instruments to compose. • Choreograph a dance. • Prepare storyboards for videos, films, skits, or plays. • Produce a video or audio program. • Take still photographs or slides. • Produce a film. • Create a film strip. •	• Use animation software. • Use a word processor to write stories, essays, or scripts. • Use a hypermedia program to create a multimedia project (e.g., HyperStudio). • Use graphics and paint software programs. •

Demonstrate Knowledge, Ability, and Creativity *Perform*	What technologies will you use and how will you use them?	
	Familiar	**New or Extended**
Students perform musical, theatrical, literary, and other works and demonstrate special abilities, such as in sports. **Engaged Learning Questions** • How will you guide students to interpret works? • What models of performance will you provide for students? • How will you guide students to be a good audience? • What kind of feedback will students get? • What will be the sources of feedback? • How will you ensure fair play and sportsmanship in competitive situations?	• Perform musical works from scores. • Read poetry or stories out loud to an audience. • Perform plays or skits from scripts. • Perform a dance. • Engage in sports using sports facilities and equipment. • Perform on the radio or create a video or audiotape. • Perform on film. • Direct the performance of others. • Coach others. • • • • •	• Use a CD-ROM of a performance with one part left out; perform that part. • Incorporate video footage of your performance into a multimedia product. • • • • • • • • • • • •

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Demonstrate Knowledge, Ability, and Creativity *Construct Products*	What technologies will you use and how will you use them?	
	Familiar	**New or Extended**
Students produce reports, projects, experiments, and displays. **Engaged Learning Questions** • How will you guide students to make products that reflect important ideas in a lesson or unit? • How will you guide students to select challenging tasks? • How will you facilitate integrating content areas within products? • How will you discourage copying or over-reliance on paraphrasing? • How will you facilitate individual responsibility in group productions? • How will you ensure that students practice new and familiar skills?	• Use paper, pencil, pen, typewriter, or word processor to write a research paper. • Create tables and charts on paper or posterboard. • Prepare demonstrations. • Create replicas/dioramas. • Produce videos and audiotapes. • Produce still photographs, films, slides, or film strips. • Use excerpts from existing products. •	• Create a hypertext stack. Note: HyperStudio can use the Internet for a stack that changes along with its Web site. • Write computer programs. • Create multimedia presentations (e.g., Power Point, Media Text, HyperStudio, or Harvard Graphics). • Use computer modeling programs (e.g., VistaPro 3D rendering program). • Create Web pages and listservs. •

Demonstrate Knowledge, Ability, and Creativity *Advise, Teach, and Persuade*	What technologies will you use and how will you use them?	
	Familiar	**New or Extended**
Students give advice, explain concepts and skills, generate novel examples and metaphors, compare and contrast, generalize, and present arguments. **Engaged Learning Questions** • How will you model the above actions? • How will you guide students to construct logical arguments? • How will you ensure that students consider multiple perspectives? • What will students be able to teach? • How will you support students' undertaking a teacher role?	• Participate in debates. • Teach or mentor peers. • Conduct and transcribe interviews. • Record an interview or debate on video- or audiotape.	• Create software that teaches something. • Put interviews or debates online. • Conduct a debate via e-mail. • Prepare answers to FAQs (i.e., frequently asked questions). • Respond to questions from people in remote sites.

Demonstrate Knowledge, Ability, and Creativity	What technologies will you use and how will you use them?	
Control	**Familiar**	**New or Extended**
Students control variables in order to make something happen, discover relationships, or demonstrate something. **Engaged Learning Questions** • What tasks encourage students to manipulate variables to answer worthwhile questions? • How can students collaborate to set up experiments and other control situations? • How can you guide students to attend to critical rather than trivial or irrelevant variables?	• Manipulate variables in an experiment. • Create a simulation. • Write word problems for other students. • Write endings for stories. • Edit a story or essay. • Demonstrate probability using coins, cards, or dice. • Perform an exercise in a physical education class. • Edit audiotapes, videos, or films. • Participate in a simulation (e.g., drivers education). •	• Use modeling software to create models. • Create a simulation on a computer or online. • Participate in an online simulation. • Write word problems on a word processor. • Revise or edit online. • Use interactive software to view literary works. • Use a spreadsheet to control variables and determine probabilities. •

Manage Learning *Set Goals and Define Problems*	What technologies will you use and how will you use them?	
	Familiar	**New or Extended**
Students set goals and define problems related to their own learning based on their knowledge of themselves and the way they learn. **Engaged Learning Questions** • How can you guide students to set learning goals that encourage them to achieve at the highest possible level? • How can you help students identify problems worth solving? • How can students work together to set mutual goals and solve mutual learning problems? • How can you help students connect their goals to assessment? • How will you ensure that goals and problems reflect students' interests and needs?	• Use problem-solving and goal-setting graphic organizers. • Conduct a needs assessment. • Take a learning styles or other inventory (e.g., Myers-Briggs).	• Conduct a needs assessment online or by using software. • Take a learning styles inventory online.

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Manage Learning *Oversee*	What technologies will you use and how will you use them?	
	Familiar	**New or Extended**
Students manage their own learning, make and implement plans, manage data, manage and monitor projects, and revise plans and products. **Engaged Learning Questions** • How will you guide students to take responsibility for managing and monitoring their learning? • How will collaboration help students learn to plan and monitor projects?	• Post assignments. • Use time management tools (e.g., Daytimers). • Use an assignment notebook. • Make a "to do" list. • Use project management procedures and systems. • Post reminders on a bulletin board. • Set up and use a filing system. • Put reminders on a telephone answering machine. • Seek feedback from others on progress. • • • • •	• Use project management software. • Use an electronic time-management system (e.g., Daytimers). • Use calendar software. • Create a spreadsheet using a spreadsheet program (e.g., Excel). • Create a database using a database program (e.g., FileMaker Pro). • • • • • • • •

Manage Learning *Reflect and Ask Questions*	What technologies will you use and how will you use them?	
	Familiar	**New or Extended**
Students think about what they are learning and doing, and ask questions based on their reflections to improve their learning. **Engaged Learning Questions** • How will you guide students to use reflection as a means to increase their responsibility for their learning? • How will you model reflection? • How will you model asking good questions? • How will you facilitate students' asking questions that encourage exploration and experimentation with concepts and ideas?	• Keep a journal, either with writing or drawing. • Keep an audio or video journal. • Participate in a focused dialogue with a learning partner or critical friend. • Participate in discussion groups. • Take part in Socratic questioning. • Write to a pen pal. • Take photographs. •	• Participate in online groups (e.g., National Student Resource Center). • Participate in an online collaboration (e.g., CoVIS Collaboratory Notebook). • Talk with others and ask questions via e-mail, listservs, or chat rooms. •

Manage Learning ***Evaluate Self and Others, Get Evaluated by Others, and Make Judgments***	What technologies will you use and how will you use them?	
	Familiar	**New or Extended**
Students assess themselves and others; are assessed by teachers, other adults, and peers; and evaluate materials, tasks, lessons, and products. **Engaged Learning Questions** • How will you ensure that assessment is ongoing? • How can assessment help students become more responsible for their own learning? • How will you work with students to create meaningful assessment criteria? • What opportunities will students have to judge materials, tasks, products, and lessons? How will you guide them to make good judgments?	• Work with a critical friend. • Create criteria or rubrics for evaluating books, curriculum materials, tasks, lessons, products, and creative efforts. • Create criteria or rubrics for evaluating videos, audiotapes, films, radio programs, CDs, transparencies, laser disks, and other commercial products. • Give presentations (in person or using audio or video) for self- and class evaluations. •	• Work with a critical friend online. • Talk with others online via e-mail, listservs, or chat rooms. • Participate in collaborative, online projects (e.g., CoVIS Collaboratory Notebook). • Create criteria to evaluate software, Web sites, and other electronic resources. •

Technology Checklist

This checklist can help you identify and record technology that is available in your school. As your school obtains new technology, check it off the list so that you always know what is available to you.

Familiar Technologies

___ Adding machine
___ Art supplies (e.g., paint, brushes, crayons, pastels, canvas, paper, clay, wood, metal)
___ Audiotapes and tape recorder
___ Calculators
___ Camera (analog)
___ Carrels
___ Chalk and markers
___ Chalkboard
___ Charts and displays (e.g., periodic table, world's languages)
___ Classroom furniture
___ Compact disks and disk player
___ Construction paper, manila paper
___ Dry-erase board
___ Fax machine
___ Film strips and projector
___ Lab equipment
___ Laser disks and laser disk player
___ Mailing services
___ Maps
___ Measurement instruments (length, volume, mass, velocity, temperature)
___ Microfiche and microfilm
___ Movie camera
___ Movie film and projector
___ Network and cable television
___ Notebooks and binders
___ Periodicals, newspapers
___ Photocopy machine
___ Picture files
___ Playground equipment
___ Posters and large pictures
___ Radios
___ References (e.g., encyclopedias, Atlas, dictionary, thesaurus, Reader's Guide)
___ School supplies (e.g., paper, pencil, pen, scissors, ruler)
___ Shop equipment
___ Slide rules
___ Slides and slide projector
___ Sports equipment
___ Square root table
___ Telephones
___ Textbooks
___ Three-lined paper
___ Trade books
___ Transparencies and overhead projector
___ Toys and larger play equipment (e.g., sand table)
___ Typewriter
___ U.S. mail
___ Video camera
___ Videos and VCR
___ Word processor(s)
___ Other

_____

_____

_____

New or Extended Technologies

____ CD-ROMs and CD player
____ Chat rooms
____ Color printer
____ Commercial software
____ Computers (networked, desktop, laptop, or server)

Platform
____ Apple II
____ Macintosh
____ PC compatible

Processing speed
____ 286
____ 386
____ 486
____ Pentium
____ 68K
____ Power PC

____ Digital camera
____ E-mail
____ Internet, World Wide Web access
____ LAN (local area network)
____ LCD panel
____ Listservs, discussion centers
____ Locally developed software
____ Modem
____ Printer
____ Probeware
____ Scanner
____ WAN (wide area network)
____ Other

_____

_____

_____

The Advantages and Disadvantages of Different Technologies

The purpose of this tool, which is divided into two tables, is to help you select appropriate technologies by identifying the key advantages and disadvantages of each one. We encourage you to add your own list of pros and cons as you use each technology.

One potential disadvantage of many of the new or extended technologies is that they require special wiring that schools may not have. Other possible disadvantages include the following:

- Many new users fear technology.
- Technology breakdowns can be disruptive and usually require experts to repair.
- Initial hardware, software, and online connection costs can be high.
- Equipment rapidly becomes outdated.
- Some schools misuse technology (e.g., for drill and practice only) or use it when a more traditional technology may be even more effective.

Familiar Technology	Advantages	Disadvantages
Adding machines	Easy to use Relatively inexpensive	Limited functions Outdated
Art supplies (e.g., paint, brushes, crayons, canvas, clay, wood, metal)	Easy to use Encourages creativity Fun	Can be messy May be expensive
Audiotapes and audiotape players	Portable Easy to use Relatively inexpensive	Limited to recorded sound
Audiotape recorders	Portable Easy to use Relatively inexpensive Promotes interviewing, journaling	Limited to recorded sound Transcribing is tedious Can be difficult to hear
Calculators	Easy to use Reliable Time saving Most are inexpensive Some have special functions	May prevent kids from learning important math concepts if used improperly by the instructor
Cameras (analog)	Easy to use Promotes creativity Creates high resolution images Portable	Relatively expensive Limited to still images

Familiar Technology	Advantages	Disadvantages
Carrels	Provide privacy for study and individual work	Can be overused Students may waste time if left unsupervised
Chalk, markers	Easy to use Inexpensive	Can be messy Can cause allergies May have an unpleasant odor
Chalkboards	Easy to use Easy to see across the room Available in most classrooms Relatively inexpensive	Information is not permanent
Charts, displays (e.g., periodic table)	Easily illustrate facts and concepts	May become outdated
Classroom furniture	Different configurations can facilitate different learning contexts or situations	Poor configurations can work against learning or collaboration Some furniture is immovable
Compact disks, CD players	High-quality sound Easy to use Often portable	Relatively expensive Cannot record on disks
Construction paper, manila paper	Easy to use Encourages creativity Many uses Relatively inexpensive	May be overused
Dry-erase boards	Easy to use Easy to see Relatively inexpensive	Information is not permanent
Fax machines	Easy to use Very fast Reach anyone with a fax	Somewhat costly May get junk mail Recipient must have a fax Can yield imperfect or incomplete copies
Film strips	Easy to use Relatively inexpensive	May be outdated Limited interaction
Lab equipment	Most is easy to use Necessary for hands-on experiments	Can be costly Can be dangerous if used improperly May require special storage

Familiar Technology	Advantages	Disadvantages
Laser disks, laser disk players	High resolution Interactive Easy to use Stores lots of information	Expensive
Mailing services	Reliable Relatively fast	Can be costly
Maps	Illustrates geographical concepts Shows many details Easy to use Relatively easy to store	Can become outdated
Measuring instruments	Easy to use Portable Relatively inexpensive Critical for learning many concepts Easy to manipulate variables and do experiments	Accuracy may vary
Microfiche, microfilm	Relatively easy to use Easy to store information Archival Takes up little space	Requires special equipment Limited to one or two users at a time
Movie camera	Easy to use Portable Multiple creative uses Students can make pinhole cameras	Uncommon in schools Somewhat expensive
Movie films, projectors	High resolution images Relatively easy to use Can be used to create animation	Expensive Old films become brittle Equipment can malfunction Film is not reusable
Network/cable television	Variety of programming Easy to use Inexpensive	Not all programs are high quality Programs may not match lesson
Notebooks, binders	Flexible Relatively inexpensive Necessary for tasks, such as keeping a journal	Kids lose them Cumbersome Can get disorganized

Familiar Technology	Advantages	Disadvantages
Periodicals, newspapers	Portable Archival Inexpensive Multiple copies available Contains much information Provides detailed news Contents are reliable and edited Easy to use	Not interactive Takes up space May contain information that is not relevant to the lesson Copies will wear out
Photocopy machines	Easy to use	Can promote overuse of worksheets May encourage copyright infringement or plagiarism Uses a lot of paper
Picture files	Portable High resolution image Relatively inexpensive	Picture quality can diminish over time May become outdated Takes up space
Playground equipment	Kids like it Develop large and small motor skills Promote cooperation and taking turns Can promote science and other concepts Provides physical exercise	Dangerous if misused Can be costly
Posters, large pictures	Portable High resolution image Relatively inexpensive Pleasant to view	Easy to damage May not have a high educational value or function
Radio	Easy to use Relatively inexpensive Encourages use of imagination Multiple formats (e.g., news, talk, music, sports)	Not all programs are of high quality
References (e.g., Atlas encyclopedia, dictionary, thesaurus, Reader's Guide)	Portable Archival Will not become obsolete quickly Multiple copies available Contains much information on specific topics Contents are reliable and edited Regular updates are available Easy to use	Not interactive New editions can be costly Takes up space May wear out

Familiar Technology	Advantages	Disadvantages
School supplies (e.g., paper, pen, pencil, ruler, scissors)	Easy to use Necessary for many tasks Inexpensive	Kids lose them
Shop equipment	Develops large and small motor skills Develops specific skills for practical tasks Promotes creativity Promotes cooperation Provides practical lessons for potential career	Dangerous if misused Can be costly
Slide rules	Inexpensive Addresses basic math concepts	Out of date Takes too much time
Slides, slide projectors	High resolution Easy to use Portable Good for large groups Can be accompanied by an oral or recorded presentation	Somewhat expensive Limited to still pictures
Sports equipment	Necessary for many sports Develops large and small motor skills Provides physical exercise Promotes sportsmanship and appropriate competition	Can be dangerous if misused Can be detrimental if winning is stressed over sportsmanship
Square root tables	Inexpensive Does away with tedious calculations	Out of date
Telephones	Easy to use Everyone has one	Long distance is costly
Textbooks	Portable Archival Inexpensive Multiple copies available Contains much information Contents are reliable and edited Easy to use	Can become outdated Often written at too low a level May contain controversial ideas or information to satisfy special interest groups
Three-lined primary paper	Relatively inexpensive Easy to use Flexible	Kids lose them Easily torn or damaged

Familiar Technology	Advantages	Disadvantages
Toys, larger play equipment	Kids like them Develops large and small motor skills Promotes cooperation and taking turns Can promote science or other concepts Provides physical exercise	Dangerous if misused Can be costly
Trade books	Portable Archival Inexpensive Will not become obsolete quickly Multiple copies available Contains much information Contents are reliable and edited Easy to use	Not interactive Long lag time between editions Take up space Copies can wear out
Transparencies, overhead projectors	Flexible Easy to use Portable High resolution	Can be overused
Typewriters	Easy to use Skills are relatively easy to learn Promotes keyboarding skills	Moderately costly Limited use Somewhat outdated
U.S. mail	Reliable Inexpensive	Takes several days
Video cameras	Promotes creativity and imagination Shows action Relatively easy to use	Expensive Copyright issues
Video editing equipment	Encourages creativity Produces high quality product	Expensive Requires training to use
Videotapes, VCRs	Easy to use Tapes are portable Combines sound and visual images Flexible Tapes can be reused/edited	Tapes will wear out Relatively costly VCRs are not very portable Copyright issues
Word processors	Easy to use Promotes keyboarding skills	Somewhat limited use

New or Extended Technologies

Technology	Advantages	Disadvantages
CD-ROMs, CD-ROM players	Interactive Easy to use Stores lots of information	Information is "read only" May need to share disks
Chat rooms (e.g., MUDs)	Communicate online with anyone in the world	Sometimes unreliable information "Flames" from some users
Color printers	See and share color products	Price and maintenance more expensive than b/w printers
Commerical software	Ready to use Professional Wide variety of topics Often can be customized	Must preview to ensure it meets your needs and interests and does not contain undesirable features
Computers	Highly versatile Saves drudgery and busy work Processes information rapidly Encourages experimentation and creativity Errors are easy to fix High benefits compared to costs	Expensive Quickly outdated Users may need to share equipment Users must learn special skills to operate
Digital cameras	Creates digital photos for use on-line	Often expensive May have low resolution Requires powerful computers
E-mail	Correspond online with anyone in the world Available 24 hours a day Can attach documents Can forward messages Relatively inexpensive	Requires expensive hardware Undeliverable mail
Internet, World Wide Web	Information available globally Fosters explorations Allows information sharing on a global scale Teachers can bookmark sites for students Provides access to information not available elsewhere	Some content can be unreliable Sometimes content is disorganized Connections are slow without high-powered, expensive equipment Users need good research and evaluation skills

Technology	Advantages	Disadvantages
LCD panels	Show contents of computer screen to a large group	Expensive Fragile Problem with motion sequences
Listservs, discussions centers	Communicate online with anyone in the world Create your own listserv	Sometimes unreliable information "Flames" from some users
Local area network (LAN)	Share information/files locally Tailor information to fit local needs	Available only locally
Locally developed software	Customized to meet local needs and interests Can be developed by students or teachers	Time consuming to plan/produce Requires content and technology expertise
Modems	Allows access to remote servers	Ties up phone lines unless a separate line is provided
Printers	See and share products Prices are coming down	Still somewhat expensive Schools need more than one
Probeware	Receive information in real time	Requires technical expertise
Scanners	Digitizes text and graphics Eliminates need to type text	Poor copy quality Expensive
Wide area network (WAN)	Share information/files over a larger area	Information may not meet local needs or interests
Other		

Glossary

Following is a list of terms you'll come across as you become more familiar with your computers and the Internet. Words in bold in the definitions are themselves defined in the Glossary.

abort — To stop a computer application or process (usually at an unexpected point).
I had to abort the download because I ran out of time.

access — A way to connect to the Internet.
I have dial-up access through my employer.

account — An arrangement that gives a user the right to access a network. This usually involves a unique user name and a password. (See login.)
I couldn't use my account because I forgot my password.

address — A string of letters and/or numbers used to route a connection from one computer to another. This might be an e-mail address, an URL on the World Wide Web, the address of a gopher site, and so on. Capitalization counts in many addresses.
My e-mail address is steve9@umic.edu.

analog phone line — A regular phone line like those in most homes. A modem needs to connect to an analog phone line. Some schools and offices have a switching system that uses digital phone lines.
I couldn't find an analog phone line in their office.

AppleTalk — Networking software built into Macintosh computers. AppleTalk cannot be used to connect directly to the Internet.
My computer uses AppleTalk to connect to the printer.

archive — A collection of files. Some universities, government offices, and other organizations have archives of computer software and information that they make available to the public.
I downloaded a copy of Stuffit Lite from the UUNet archive.

ASCII — Acronym for the *American Standard Code for Information Interchange*. This term usually refers to a computer text file without any formatting (no bold, italics, and so on). On the Macintosh this is frequently called "plain text." Other computers sometimes refer to ASCII files as "text" or "DOS text." Windows computers frequently add the ".txt" extension to ASCII files.
My e-mail supports only ASCII files, so my document wasn't pretty when it got to Ed.

baud

A measure of the speed of a data transfer. A 28.8 baud modem will transfer twice as much data (at least in theory) as a 14.4 baud modem in the same amount of time.
His new 28.8 baud modem is much faster than my modem.

binhex

A system for converting binary data to ASCII data so that it can be transferred over a network. This is usually used for Macintosh files, but not Windows files.
My e-mail program binhexed the file so that it could be e-mailed.

bookmark

A feature on most browers that allows users to create a list of World Wide Web sites that they would like to visit again. Bookmarks save users the trouble of typing in long URLs.
I created a bookmark so I could quickly find the Department of Education's World Wide Web site.

browser

Software to let the user view files on the World Wide Web. Netscape, Mosaic, and Internet Explorer are well-known browsers. Some browsers also incorporate other functions, such as sending e-mail, viewing gopher documents, and downloading files from ftp sites.
I used my browser to surf the Internet looking for information about American music.

CD–ROM

An acronym for *Compact Disk–Read Only Memory.* When you buy a CD-ROM, the data (text, pictures, music, QuickTime movies, and so on) are already permanently on the disk. You cannot change what is on a CD-ROM. A CD-ROM can hold up to 464 times more information than a diskette, which makes it a convenient way for vendors to distribute large files. Many new computers come with a CD-ROM drive built in, but CD-ROM drives can also be added to existing computers. A CD-ROM is the same size as a music CD, but it stores data in a different format (many computers can play the music from a regular CD).
I got a new CD-ROM with pictures of African animals.

chat

To "talk" online. Some online services (especially America OnLine) have "chat rooms" organized by topic where people are able to read what others have written and respond in real time.
Our group held its meeting in a chat room because our members come from all over the country.

client — A term used when using your World Wide Web browser. Your computer is the client and the computer that houses the documents you are viewing is the server. Sometimes the software that accesses the server is called the client.
My telnet client is not very user friendly.

command line — A place for you to enter commands. This is usually on computers using DOS or UNIX.
I typed "Logoff" on the command line.

compact/compress — To save a file so it will take up less room on a hard drive or diskette. DOS and Windows files that have been compressed frequently have a ".zip" extension. Macintosh compressed files frequently have a name ending with ".sit" or ".sea." A compressed file is smaller than the original file, but it must be decompressed before it can be used.
He sent me a file that had been compressed with Stuffit.

configure — To set up hardware or software so that it is ready to use. Software used to connect to the Internet frequently must be configured with data from the Internet Service Provider before it can be used.
Part of my Interslip configuration is a script that dials my Internet Service Provider.

connect — To go on-line, to link your computer to another computer.
I couldn't connect to the university because their server was down.

cyberspace — A term used by computer users when linking from one web site to another. Users frequently feel that they are moving from one place to another and refer to these locations as "cyberspace."
I spent the day in cyberspace looking for information about American Indians.

database — A computer file that is a collection of data. Many organizations maintain a database that lists all their members along with addresses and phone numbers.
My database of club members includes everyone's name, address, and telephone number.

dedicated line — A wire used only to connect two computers. This wire could be a phone line or LAN (Local Area Network).
I got a dedicated line at home so that call waiting couldn't interfere with my Internet use.

dial-up
A connection to a network made over a regular phone line.
My dial-up connection to the World Wide Web is very slow.

digital phone line
A phone line that sends sound digitally. These lines are frequently found in schools and offices that have a switching system. A modem needs to connect to an analog phone line.
My modem wouldn't work because we could only find a digital phone line at school.

directory
A group of files. Macintosh users refer to a directory as a folder.
I have placed all of my sample lessons in one directory.

diskette
A small, portable, and removable cassette (usually) containing magnetic material used to store computer information. Diskettes are very frequently (though somewhat inaccurately) referred to as floppies. Diskettes are single or double sided as well as high or low density. Different kinds of diskettes hold different amounts of data. A frequently used type of diskette holds 1.4 MB of data.
I made a backup copy of my document and saved it on a diskette.

DOS
An acronym for Disk Operating System. DOS is the operating system that controls many IBM compatible computers. DOS has largely been replaced by Windows 95.
I type my entries on the command line because I have a DOS computer.

download
To copy files from another computer to your own over a network.
He downloaded the software upgrade from the Apple web site.

e-mail
Shorthand for electronic mail. E-mail allows people to send and answer messages to each other over a computer network.
I love getting e-mail because it gets to me quickly and, unlike a phone call, I don't have to answer until I am ready.

ethernet
A system for connecting computers in a LAN (Local Area Network).
The LAN at my school uses ethernet.

extension
A period and three letters added to the end of a file name to identify the file type. Plain text documents use the ".txt" extension. While extensions are fairly common on Windows computers, they are rarely used on Macintosh computers except on the Internet.
The file "Position.sea" must be a self-extracting archive because it has the ".sea" extension.

FAQ An acronym for *Frequently Asked Questions*. Many newsgroups and other Internet related sites have a list of Frequently Asked Questions for newcomers.
I read the FAQ before I sent e-mail asking about how to post a message to the newsgroup.

file Computer data identified by a name. This could be a word processing document, an application, a graphic, and so on.
The definitions you need are on my computer in a file called "Glossary."

flame An angry electronic message. Some messages posted in public places in the computer world evoke angry responses. When angry replies evoke more angry replies, a "flame war" breaks out.
I got flamed for my message saying Macs were better than Windows computers.

floppy A small, portable, removable cassette containing (usually) magnetic material used to store computer information. The term floppy is often used (somewhat inaccurately) to describe a diskette. Floppies are larger than diskettes and not in wide usage any more.
I had the data on a floppy left over from my old Amiga computer.

freeware Software that the copyright holder has decided to make available to the public for free. (See shareware.)
The freeware I downloaded didn't work with System 7.5.

ftp An acronym for *File Transfer Protocol.* FTP is a system for sending files from one computer to another. Many World Wide Web browsers can download ftp files if you enter the ftp address.
I used ftp to download a shareware game for my son.

garbage Bad or undesirable characters or data. This may result from things such as a bad Internet connection, opening a file with the wrong application, or a corrupted hard drive.
When I opened the document he created on a Macintosh computer with my Windows computer, it was full of garbage.

gif A type of graphic file limited to 256 colors or shades of gray. Many graphics on the World Wide Web are gif files. It is also used as an extension to indicate a gif file. JPEG files are another type of graphic file found on the Internet, but are not limited to 256 colors.
I couldn't use the gif file because I needed a larger picture.

gopher Gopher sites are similar to World Wide Web sites, but don't have the graphic, sound, and other media capabilities of World Wide Web sites. Gopher sites usually consist of unformatted (ASCII) text, though they may also include pictures and other files that may be downloaded.
I found a gopher site full of lesson plans.

graphic Picture or artwork on a computer.
The World Wide Web page took a long time to download because it was full of graphics.

hard drive A storage device for a computer. Hard drives hold more information and are almost always faster than a diskette.
I copied some data off my hard drive onto diskettes to take to school.

hits A way for Web sites to keep track of how many people access their documents. Each access is counted as a "hit."
Their Web site has 6,000 hits a month.

.hqx An extension used to denote files that have been binhexed. Many Macintosh files cannot be sent over the Internet unless they have been binhexed. Some ftp and e-mail programs will automatically binhex documents before they are sent.
When I saw the ".hqx" extension on the file name, I knew I would need Stuffit Expander.

html An acronym for hypertext mark-up language. Most documents on the World Wide Web are created using html. Html uses ASCII text with special tags (i.e., "<b>" to indicate bold).
I learned html so that I could create a Web site.

http Shorthand for *hypertext transfer protocol*. This is the system that the World Wide Web uses for exchanging documents.
When I saw that the URL started with "http://" I knew it was a World Wide Web address.

hub A place where networked computers are connected.
Somebody had pulled my connection from the hub.

hyperlink A section of text (particularly on the World Wide Web) that links directly to another section of text (within that document or in another document).
The hyperlink took me right to the information I needed.

hypermedia Graphics, sound, and video contained in a World Wide Web document.
We wanted hypermedia on our Web site.

hypertext Text documents (particularly on the World Wide Web) that contain links to other documents.
Hypertext made it easy to find the information I needed.

icon A small picture on a computer. Some icons represent files while other icons represent actions the user can take within a program. Clicking on a scissors icon might, for instance, remove text from a document.
My children learn new software simply by clicking on the icons.

Internet A large network of computers from around the world. The World Wide Web, e-mail, telnet, and gopher are all part of the Internet.
I use the Internet to communicate with my brother, who lives in California.

Internet Service Provider A company that provides connections to the Internet for individuals, schools, or businesses.
I chose my Internet Service Provider because it had a local number I could call to get connected to the Internet.

JPEG An acronym for *Joint Photographic Experts Group*. JPEG files are computer picture files that have been compressed. Unlike gif files, some JPEG compression is "lossy," which means that data are lost; the compressed file is not exactly identical to the original. JPEG files can be compressed at many levels. Files with little compression are larger but of higher quality, while files with more compression are smaller but of lower quality. While gif files are limited to 256 colors or shades of gray, JPEG files can have thousands or millions of colors.
My brother e-mailed me a JPEG of his new home.

keyword A word used when searching a database or searching for a Web site. Some systems (such as ERIC) maintain a list of keywords, while others (such as Yahoo) let you use any word you like when searching.
I didn't find anything when I used "trains" as a keyword, but there was lots of information when I changed to "train."

LAN A Local Area Network. This is a system for connecting computers, usually within a room or a building.
I sent him the file over the LAN.

link — Same as hyperlink. A section of text (particularly on the World Wide Web) that links directly to another section of text (within that document or in another document).
The link took me right to the information I needed.

listserv — An online discussion group devoted to a special topic. Users of a listserv can read messages posted by other members of the listserv and post responses. After subscribing to a listserv, all the messages from the group are sent to individuals by e-mail.
I learned about the new grant while reading a listserv.

login/logon — The procedure used to connect a user to a network. This procedure usually involves a unique user name and a password. (See account.)
My login failed because I couldn't remember my password.

logout/logoff — The procedure used to disconnect a user from a network. This procedure usually involves a series of steps prompted by messages on the computer screen.
I logged off when I finished my work.

MB — Shorthand for megabyte. Megabytes can measure both the amount of storage space on a hard drive or the amount of RAM (see Random Access Memory) in a computer. It is difficult to say exactly how much data a megabyte of storage can hold, but 340 pages of text would be a reasonable guess.
I put in another 16 MB of RAM.

menu — A list of available commands. Usually a list of words at the top of the screen.
I chose "Copy" from the "Edit" menu.

modem — A system for sending computer data over a phone line. The modem (MODulator/DEModulator) converts the digital data used by computers to sound.
I connect to the Internet from home using a modem between my computer and my telephone jack.

MPEG — A system for compressing computer video files. MPEG is used on computers that are able to play movies.
I didn't have the software to play the MPEG movie that I downloaded.

multimedia — More than one type of medium (text, graphics, video, sound).
He wowed the audience with his multimedia presentation.

navigate — To move through your hard drive to a file or to move through a network to a file.
The dialog box asked me to navigate to my preferences file.

netiquette Network etiquette. The Internet community frowns on some types of activities, such as sending large amounts of unwelcome e-mail (spamming).
I violated netiquette by posting a question that was already answered in the FAQ (Frequently Asked Questions).

network Computers connected by modems, wires, and/or software.
I copied the file to my computer over the network.

newbie A person new to the network, computers, or the Internet.
The newbie crashed the network.

newsgroup An online discussion of a specialized topic (e.g., from aliens to zoology). Unlike listservs, newsgroups are accessed through a server.
I read in the newsgroup that Apple was coming out with a new version of QuickTime.

node An individual or computer that is part of a network.
Each node was able to share the same printer.

noise Static on the phone line. Noise can disrupt a connection to the Internet.
There was so much noise on his phone line that he had to log off.

off-line Not connected to a network.
I wrote the message off-line to keep my phone bill down.

online Connected to a network.
I went on-line to search for the information about American plants.

path Sometimes called a "pathname." A path is the list of directories that must be opened to get to a file. On a Windows computer the path might be:

A:\PROJECTS\CURRENT\PROPOSAL.DOC

On a Macintosh the same file might be found using the following path:

Macintosh HD:Projects:Current:Proposal

The URL for a World Wide Web document is a pathname.
I couldn't remember the path to the document on my computer.

pict A type of graphic file native to Macintosh computers.
I pasted the pict file into my ClarisWorks document.

port — A place to connect external devices to computers. The jack for a modem is frequently called the modem port.
I plugged my printer into the printer port.

post — To place a message on a public portion of a network.
I posted a message to the newsgroup asking for information about American cuisine.

PPP — An acronym for *Point-to-Point Protocol.* A PPP connection is frequently used when connecting a single computer to the Internet by a modem. SLIP is a similar type of connection.
It was easy to set up my PPP connection.

prompt — An indication on the computer screen that you are to add information or take action in a computer program.
I typed in the new name for my file after the "Save as ..." prompt.

protocol — A system or agreement that specifies how data will be transmitted. When a protocol is used, both the sending computer and the receiving computer know how the data will be formatted.
Fetch is software that can use the File Transfer Protocol.

QuickTime — A type of file that is able to display video on computers.
He used a QuickTime movie to make his presentation more interesting.

RAM — An acronym for *Random Access Memory.* RAM is the part of your computer where open applications and open documents are stored. The computer is able to manipulate information stored in RAM much more quickly than information that is stored on the hard drive. When a document is closed, the information in the document is removed from RAM and saved on the hard drive or a diskette.
My machine did not have enough RAM to open the large graphic file.

real time — Actions that occur at normal speed. An online discussion group is said to be real time if all the members of the group can read all the messages as they are being written.
I was frustrated because the responses weren't real time.

ROM — An acronym for *Read Only Memory.* Information stored in ROM is (hopefully) stored there permanently. The computer code to start your computer and other parts of your operating system are stored in ROM.
My ROM was damaged by the power surge.

script — A list of commands that a program can implement. Dial-up connections often use a script to tell the modem and software how they should access the Internet.
I had to update my script when my area code changed.

SCSI — An acronym for *Small Computer System Interface*. SCSI (pronounced "scuzzy") is a standard type of computer connection and cable.
My scanner is connected to my computer with a SCSI cable.

.sea — Shorthand for *self-extracting archive*. .sea is an extension added to file names to indicate that they have been compressed and can be decompressed by double clicking on them.
I was glad to see the ".sea" extension because I didn't have a utility to decompress the file.

search engine — A program that searches databases. On the Internet this usually refers to Web sites that specialize in helping people find other Web sites of interest by asking them to type in a topic name that interests them.
I used the WebCrawler search engine to find a Web site on American government.

server — A computer on a network that makes files available to other computers on the network.
I couldn't download the file I needed because the server wasn't working.

shareware — Software that the copyright holder has made available to the public on a trial basis. Typically users are allowed a period of several days or weeks to try the software to see if they want to buy it. (See freeware.)
I tried a shareware utility to copy files onto diskettes.

SIG — An acronym for Special Interest Group. SIG might refer to a listserv, a newsgroup, or a meeting held at a computer conference.
Someone at the Mac SIG told me to get System 7.5 because it made printing much easier.

.sit — An extension for files that have been compressed with Stuffit (a Macintosh compression utility.
I added ".sit" to the file name so people would know how to decompress it.

site — A collection of files on a server.
I found a WWW site about classical music.

SLIP An acronym for *Serial Line Interface Protocol.* A SLIP connection is frequently used when connecting a single computer to the Internet by a modem. PPP is a similar type of connection.
I had trouble setting up my SLIP connection.

spam To send out enormous amounts of unsolicited e-mail. Also the e-mail itself.
Some idiot spammed the newsgroup with a message about his new company.

stuff To compress a file, particularly with a program called Stuffit.
I had to stuff the file to get it to fit on a diskette.

sysop The system operator.
I had to contact the sysop to get the IP number to enter into my e-mail software.

TCP/IP An acronym for *Transmission Control Protocol/Internet Protocol.* TCP/IP is the system used to communicate with other computers on the Internet.
My computer didn't know how to handle a TCP/IP connection so I couldn't use the Internet.

telecommuting Using your computer to work from a location outside of the office (especially to access documents at the office over a network).
I told my boss he would save money on office space if the company would allow telecommuting.

telnet A system that allows you to operate another computer over a network (terminal emulation).
I telnetted in to change that file.

thread The original posting and its responses. These are common in listservs and newsgroups.
I wasn't sure what they were talking about because I missed the beginning of the thread.

tiff Shorthand for *tagged information file format.* Tiff files are graphic files. They frequently have a .tif extension.
My layout program prints .tif files very well.

UNIX — An operating system for a computer. While there are versions of UNIX that will run on most personal computers, it is usually used on larger computers. Servers on the Internet are frequently UNIX computers.
UNIX computers use case sensitive file names, unlike my Windows computer.

unstuff — To decompress a file that has been compressed with a program called Stuffit. Mostly used on Macintosh computers.
I had to unstuff the file before I could open it.

unzip — To decompress a file that has been compressed using the zip. Mostly used on Windows computers.
I had to unzip the file before I could open it.

upload — The opposite of download. Uploading is transferring a file from your computer to another computer.
I had to upload the new version of our web page to the server.

URL — Acronym for *Uniform Resource Locator*. To find a document on the World Wide Web you need to enter its URL in your browser. A World Wide Web URL looks something like: http://www.ncrel.org/ncrtec/.
I wrote down the URL because I was sure I would forget it.

utility — A small computer program with a limited purpose. Compression programs are frequently called utilities.
I have a calendar utility that I use to check the date.

web — Part of the Internet. Other parts include gopher sites and e-mail. (Same as World Wide Web.)
I didn't have enough RAM to use the Web browser.

World Wide Web (WWW) — Part of the Internet. Other parts include gopher sites and e-mail.
I didn't have enough RAM to use the WWW browser.

XON/XOFF — Signals sent between computers to indicate the start and end of data transmission.
I had to set my modem to XON/XOFF to connect with his computer.

zip — A system for compressing files, used mostly on DOS and Windows computers. Also an extension for compressed files.
I had to zip the file to get it to fit on a diskette.

References and Resources

References

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Resources

Books

Guiding Questions for Technology Planning. Randy Knuth, Chris Hopey, and Kevin Rocap, Eds. Published by North Central Regional Technology in Education Consortium, 1996. A guide to help technology planners as they consider the most significant issues related to technology planning.

Hitchhiker's Guide to the Electronic Highway. Pamala Kane. Published by MIS:Press. ISBN 1558283528. 1994. General Introduction to the Internet.

How the Internet Works. Joshua Eddings, Illustrated by Pamela Drury Wattenmaker. Published by Ziff-Davis Press, Emeryville, California. 1994. ISBN 1-56276-192-7

Internet Kids Yellow Pages. Jean Polly. Special Edition. Published by Osborne McGraw-Hill. 1996. ISBN 0078821975 Selected educational and fun sites for prekindergarten–high school.

New Internet Navigator. Paul Gilster. Published by John Wiley & Son. 1995. ISBN 0471126942 General introduction to the Internet including: UNIX, E-Mail, FTP, Telnet, Listservs, UseNet News, World Wide Web.

NetEtiquette. Virginia Shea. Published by Albion, San Francisco, CA. 1995 ISBN 0063702513. Introduction to network etiquette for e-mail and Internet.

Plugging In: Choosing and Using Educational Technology. Beau Fly Jones, Gilbert Valdez, Jeri Nowakowski, and Claudette Rasmussen. Published by Council for Educational Development and Research and North Central Regional Educational Laboratory, 1995. An introduction to the leading research about effective learning and effective technology use.

The Whole Internet User's Guide and Catalog. Ed Krol. Published by O'Reilly and Associates, Inc., 1994. ISBN: 1-56592-063-5 One of the best introductions to the Internet. Also includes references to many useful Internet resources.

Videotapes

M.I.T. Presents
Future Schools: Connected to the World
Produced by MIT, ARPA, and Master Communications Group
800-862-6164

Get Ready, Get Set, Go ON-LINE!
Two-part program
MIT and Master Communications Group, Inc.
800-862-6164

Global Quest
The Internet in the Classroom
Imaging Technology Branch
Ames Research Center
http://quest.arc.nasa.gov/video.html

Internet: A Practical Approach
PBS Television Program (5/5/94)
Features Ed Krol, author of *The Whole Internet User's Guide and Catalog*
713-466-7224

Learning With Technology: Planning to Plug In
North Central Regional Educational Laboratory
1900 Spring Road, Suite 300
Oak Brook, IL 60521-1480
800-356-2735

Learning With Technology: Merging Onto the Information Highway
North Central Regional Educational Laboratory
1900 Spring Road, Suite 300
Oak Brook, IL 60521-1480
800-356-2735

Learning With Technology: Tools for Thinking
North Central Regional Educational Laboratory
1900 Spring Road, Suite 300
Oak Brook, IL 60521-1480
800-356-2735

Teaching and the World Wide Web
Videos for the Twenty-First Century Education Reform Group
800-NET-9493

Online Resources for Staff Development

TIES and Internet for Minnesota Schools
http://InforMNs.k12.mn.us
gopher.InforMNs.k12.mn.us

Global SchoolNet Foundation
P.O. Box 243
Bonita, CA 91908-0243
http://www.gsn.org

ASCD Gopher and World Wide Web
http://www.ascd.org
gopher.ascd.org

Pathways for School Improvement server
North Central Regional Educational Laboratory
http://www.ncrel.org

Roadmap for the Information Highway
Patrick Crispen
Internet address: **pcrispei@ua1vm.ua.edu**

Mathematics Learning Forum
Bankstreet College of Education
On-line mathematics learning project
mhoney@ralphbunche.rbs.edu

Mining the Internet
Internet Staff Development
Computing Services, University of California, Davis, CA 95616-8563
Anonymous ftp: **ftp:nisc.sri.com**
Name: anonymous, Password: Guest

The Society for Technology and Teacher Education (STATE) on CoSN Gopher.
gopher.cosn.org

Tips for Internet Training with Teachers
Responsible Use of the Network and Netiquette
Boulder Valley County Schools
Boulder, Colorado
ftp.bvsd.k12.co.us

AskERIC
http://ericir.syr.edu

TERC LabNet
http://hub.terc.edu/terc/LabNet/LabNet_info.html

Welcome to SAMI (Science and Math Initiatives)
http://www.c3.lanl.gov/~jspeck/sami-home.html

Course Evaluation Material

Course Evaluation Instruments

As a part of the NCREL evaluation of the *Learning With Technology* Course, there are four instruments for the participants to complete: Course Participant Profile Form, Online Course Participant Pre- and Posttests, and the End-of-Course Participant Evaluation Form. The course facilitator will tell you when each needs to be filled out and then collect the completed forms and send them to NCREL. The information will remain confidential and be used by NCREL only to evaluate the nature of the implementation and the impact of the course. The following is a brief description of each of the four instruments:

Course Participant Profile Form

The Course Participant Profile Form is to be completed by each participant at the **beginning of the course.** The demographic information obtained will be added to the *Learning With Technology* Course participants' database and used to keep track of the types of individuals taking the course. NCREL staff may use this information for possible follow-up of participants at a later point in time. This form also asks questions regarding participants' motivations for enrolling in the course and previous courses in educational technology use and applications (prior knowledge).

Online Course Participant Pretest and Posttest

The Online Course Participant Pretest is to be completed by all participants at the **onset of the course.** Likewise, the Posttest should be completed by all participants at the **final session of the course.** The Pre- and Posttests are located on the course Web site (http://ncrelsgi.ncrel.org/ncrel/courses/lwt). The site is password protected. The user name is *Course* and the password is *learn.* Both the user name and password are case sensitive and need to be typed exactly as they appear here in plain text. Although copies of the Pre- and Posttests are found in the Participant's Manual, they only should be used in the event that you do not have access to the Internet. Otherwise, **we strongly encourage you to complete the Pre- and Posttests online** since they were designed to assess participants' knowledge and applications of the course components.

End-of-Course Participant Evaluation Form

During the **final session of the course,** participants should complete the End-of-Course Participant Evaluation Form. The instrument is designed to help both NCREL and the course facilitator determine the effectiveness of various aspects of the course and how each improved participants' knowledge and skills regarding integrating technology into instruction to promote engaged learning.

Course Participant Profile Form

Academy
Course Participant
Course Facilitator
Course Evaluator

Site of Course: _____ Course Starting Date: _____

Name _____
(First) (Last) (Title - Mr., Ms., Dr.)

1. Professional Role in Organization (Check all that apply.)

a. ❑ Teacher: grade level(s) ❑ K ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 ❑ 6 ❑ 7 ❑ 8 ❑ 9 ❑ 10 ❑ 11 ❑ 12

b. ❑ Curriculum specialist: area of specialty _____

c. ❑ Learning resource specialist/librarian

d. ❑ Technology specialist

e. ❑ Building-level administrator

f. ❑ District-level administrator

g. ❑ Intermediate service agency employee

h. ❑ Other (describe) _____

School/District Name: _____

School Address: _____

City: _____ **State:** _____ **Zip Code:** _____

School Phone Number: _____ **Fax Number:** _____

E-mail Address: _____

2. Are you participating in the *Learning With Technology* course for any of the following types of credit? *(Check all that apply and indicate the number of credit hours and the name of the institution through which credit is being granted.)*

a. ❑ Graduate Credit # of hours _____ Institution _____

b. ❑ Continuing Education Credit (CEU) # of hours _____ Institution _____

c. ❑ Recertification # of hours _____ Institution _____

d. ❑ In-district Staff Development # of hours _____ Institution _____

—Over—

Course Participant Profile Form (continued)

3. How did you hear about the course? *(Check all that apply.)*

a. ❑ Mail/flyer

b. ❑ Word of mouth from colleagues in same school or office

c. ❑ From school district administrator or staff member

d. ❑ From area or state administrators or consultant outside of my school district

e. ❑ Advertisements

f. ❑ Other (describe) _____

4. Why are you taking the course?

_____

_____

_____

_____

_____

5. How many contact hours of educational technology training have you received to date? (write 0 if none) _____

6. How many of these training hours focused *specifically* on concrete ways to integrate technology into the curriculum and to help students be active, engaged learners? _____

Online Course Participant Pretest

http://ncrelsgi.ncrel.org/ncrel/courses/lwt/pretest.htm
User name: Course
Password: learn > case sensitive

Academy
Course Participant
Course Facilitator
Course Evaluator

Last Name _____ First Name _____

E-mail _____ Facilitator Name _____

Date _____ Course Site _____

Please rate how much you ***understand and use*** the principles and techniques described below as a part of your teaching (either as part of your lessons or in helping you prepare your lessons).

Your frank self-assessment at the beginning of the course will help facilitators plan what to emphasize throughout the course. Doing this again at the end of the course will show what you have learned. Your answers will be kept completely confidential; only group summaries will be reported in an evaluation of the course.

Read the following statements and check the box of the response that most closely matches your knowledge and use of the concept.

1. I understand and apply principles of engaged learning.

a. ☐ No understanding; do not use in my teaching

b. ☐ Some understanding; infrequently use in my teaching

c. ☐ Good understanding; frequently use in my teaching

d. ☐ Very good understanding; regularly use in my teaching

2. I am familiar with listservs and have used them to communicate with other educators to improve my teaching.

a. ☐ No familiarity; do not use in my teaching

b. ☐ Some familiarity; infrequently use in my teaching

c. ☐ Good familiarity; frequently use in my teaching

d. ☐ Very good familiarity; regularly use in my teaching

3. I know how to apply technology to increase the quality and effectiveness of learning in my classroom.

a. ☐ No understanding; do not use in my teaching

b. ☐ Some understanding; infrequently use in my teaching

c. ☐ Good understanding; frequently use in my teaching

d. ☐ Very good understanding; regularly use in my teaching

Online Course Participant Pretest (continued)

4. I have designed lessons that integrate technology into instruction and learning.

a. ❑ No understanding; do not use in my teaching

b. ❑ Some understanding; infrequently use in my teaching

c. ❑ Good understanding; frequently use in my teaching

d. ❑ Very good understanding; regularly use in my teaching

5. I know how to develop a comprehensive planning framework that integrates technology and use such a framework to plan units and lessons.

a. ❑ No understanding; do not use in my teaching

b. ❑ Some understanding; infrequently use in my teaching

c. ❑ Good understanding; frequently use in my teaching

d. ❑ Very good understanding; regularly use in my teaching

6. I am familiar with the World Wide Web and integrate it into my instruction.

a. ❑ No familiarity; do not use in my teaching

b. ❑ Some familiarity; infrequently use in my teaching

c. ❑ Good familiarity; frequently use in my teaching

d. ❑ Very good familiarity; regularly use in my teaching

7. I am familiar with the Internet server *Pathways for School Improvement* and use it as a professional development resource.

a. ❑ No familiarity; do not use as a professional development resource

b. ❑ Some familiarity; infrequently use as a professional development resource

c. ❑ Good familiarity; frequently use as a professional development resource

d. ❑ Very good familiarity; regularly use as a professional development resource

Online Course Participant Pretest (continued)

8. I have access to sample lessons that demonstrate effective use of technology in curriculum.

a. ❑ No access; do not use these types of sample lessons

b. ❑ Some access; infrequently use these types of sample lessons

c. ❑ Good access; frequently use these types of sample lessons

d. ❑ Very good access; regularly use these types of sample lessons

9. I have the opportunity to observe and learn from other teachers using technology in their curriculum.

a. ❑ No opportunity; do not observe and learn from other teachers

b. ❑ Some opportunity; infrequently observe and learn from other teachers

c. ❑ Good opportunity; frequently observe and learn from other teachers

d. ❑ Very good opportunity; regularly observe and learn from other teachers

Online Course Participant Posttest

http://ncrelsgi.ncrel.org/ncrel/courses/lwt/posttest.htm
User name: Course
Password: learn > case sensitive

Academy
Course Participant
Course Facilitator
Course Evaluator

Last Name _____ First Name _____

Date _____ Course Site _____

Please rate how much you ***understand and use*** the principles and techniques described below as a part of your teaching (either as part of your lessons or in helping you prepare your lessons).

Your frank self-assessment at the end of the course will show what you have learned. Your answers will be kept completely confidential; only group summaries will be reported in an evaluation of the course.

Read the following statements and check the box of the response that most closely matches your knowledge and use of the concept.

1. I understand and apply principles of engaged learning.

a. ❑ No understanding; do not use in my teaching

b. ❑ Some understanding; infrequently use in my teaching

c. ❑ Good understanding; frequently use in my teaching

d. ❑ Very good understanding; regularly use in my teaching

2. I am familiar with listservs and have used them to communicate with other educators to improve my teaching.

a. ❑ No familiarity; do not use in my teaching

b. ❑ Some familiarity; infrequently use in my teaching

c. ❑ Good familiarity; frequently use in my teaching

d. ❑ Very good familiarity; regularly use in my teaching

3. I know how to apply technology to increase the quality and effectiveness of learning in my classroom.

a. ❑ No understanding; do not use in my teaching

b. ❑ Some understanding; infrequently use in my teaching

c. ❑ Good understanding; frequently use in my teaching

d. ❑ Very good understanding; regularly use in my teaching

Online Course Participant Posttest (continued)

4. I have designed lessons that integrate technology into instruction and learning.

a. ❑ No understanding; do not use in my teaching

b. ❑ Some understanding; infrequently use in my teaching

c. ❑ Good understanding; frequently use in my teaching

d. ❑ Very good understanding; regularly use in my teaching

5. I know how to develop a comprehensive planning framework that integrates technology and use such a framework to plan units and lessons.

a. ❑ No understanding; do not use in my teaching

b. ❑ Some understanding; infrequently use in my teaching

c. ❑ Good understanding; frequently use in my teaching

d. ❑ Very good understanding; regularly use in my teaching

6. I am familiar with the World Wide Web and integrate it into my instruction.

a. ❑ No familiarity; do not use in my teaching

b. ❑ Some familiarity; infrequently use in my teaching

c. ❑ Good familiarity; frequently use in my teaching

d. ❑ Very good familiarity; regularly use in my teaching

7. I am familiar with the Internet server *Pathways for School Improvement* and use it as a professional development resource.

a. ❑ No familiarity; do not use as a professional development resource

b. ❑ Some familiarity; infrequently use as a professional development resource

c. ❑ Good familiarity; frequently use as a professional development resource

d. ❑ Very good familiarity; regularly use as a professional development resource

Online Course Participant Posttest (continued)

8. I have access to sample lessons that demonstrate effective use of technology in curriculum.

a. ❑ No access; do not use these types of sample lessons

b. ❑ Some access; infrequently use these types of sample lessons

c. ❑ Good access; frequently use these types of sample lessons

d. ❑ Very good access; regularly use these types of sample lessons

9. I have the opportunity to observe and learn from other teachers using technology in their curriculum.

a. ❑ No opportunity; do not observe and learn from other teachers

b. ❑ Some opportunity; infrequently observe and learn from other teachers

c. ❑ Good opportunity; frequently observe and learn from other teachers

d. ❑ Very good opportunity; regularly observe and learn from other teachers

End-of-Course Participant Evaluation Form

Academy
Course Participant
Course Facilitator
Course Evaluator

Site of Course: _____ End Date of Course: _____

Course Facilitator(s): _____

1 Professional Role *(check one)*

a. ❑ Elementary-level teacher (grades K–3)
b. ❑ Middle-level teacher (grades 4–8)
c. ❑ Secondary-level teacher (grades 9–12)
d. ❑ Administrator
e. ❑ Curriculum director
f. ❑ Technology specialist
g. ❑ Library/media specialist
h. ❑ Other (describe) _____

Please evaluate the effectiveness of the course and the facilitator in improving your knowledge and skills of integrating technology to promote engaged learning. Using a scale of 1 to 4 and the accompanying descriptors, circle the number that matches your assessment of the component.

1 = very poor, needs considerable improvement
2 = marginally acceptable
3 = good
4 = outstanding, superior, "right on target"

2. Course Design and Delivery	1	2	3	4
a. ❑ How the course was conducted (sequencing, pace)	❑	❑	❑	❑
b. ❑ Number of course sessions	❑	❑	❑	❑
c. ❑ Allocation of collaborative work time	❑	❑	❑	❑
d. ❑ Effectiveness of materials (handouts, simulation, videos, etc.)	❑	❑	❑	❑
e. ❑ Interaction between facilitators and participants	❑	❑	❑	❑
f. ❑ Interaction among participants	❑	❑	❑	❑
g. ❑ Outside session assignments	❑	❑	❑	❑
h. ❑ Computer availability for practice outside of class	❑	❑	❑	❑
i. ❑ Availability of technical support and assistance	❑	❑	❑	❑

3. Course Facilitators	1	2	3	4
a. ❑ Communication of information	❑	❑	❑	❑
b. ❑ Preparation and organization	❑	❑	❑	❑
c. ❑ Knowledge of material	❑	❑	❑	❑
d. ❑ Response to questions	❑	❑	❑	❑
e. ❑ Assistance provided	❑	❑	❑	❑

Academy
Course Participant
Course Facilitator
Course Evaluator

End-of-Course Participant Evaluation Form (continued)

4. Course Impact

Please respond to the following items relating to the impact the course has had on you, using a scale of 1 to 5. Use these descriptors as guidelines, and check the number that matches your assessment of that component.

1 = not at all 2 = only a little 3 = somewhat 4 = quite a bit 5 = a tremendous amount

As a result of this course, I know . . .	1	2	3	4	5
a. How to evaluate the effectiveness of a lesson or unit as to how well it promotes engaged, meaningful learning.	❑	❑	❑	❑	❑
b. How to evaluate the extent to which a lesson or unit both integrates technology and promotes engaged, worthwhile learning.	❑	❑	❑	❑	❑
c. How to plan worthwhile and engaging lessons and units that integrate technology effectively.	❑	❑	❑	❑	❑
d. How to implement worthwhile and engaging lessons and units that integrate technology effectively.	❑	❑	❑	❑	❑
e. How technology can promote engaged learning.	❑	❑	❑	❑	❑
f. What are poor uses of technology.	❑	❑	❑	❑	❑
g. The range of technologies and technology applications that I can use.	❑	❑	❑	❑	❑

5. Comments relative to the course

a. What were your expectations for the course? Were they met?

b. What two to three things from the course did you find most useful?

c. What about this course would you change or modify? In what ways?

d. In what ways do you intend to use what you have learned in your own classroom?

e. Was it worth your time and money to participate in the course? ❑ Yes ❑ No

1900 Spring Road, Suite 300 • Oak Brook, IL 60523-1480
800-356-2735 • Fax: 630-571-4716

www.ncrel.org

NCRTEC Learning With Technology Course

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Learning With Technology Course

Computers, CD-ROMs, videoconferencing, and the Internet are powerful tools for learning, communicating, and collaborating that can play an important role in education. But how can teachers integrate them into classroom instruction in ways that will improve the performance and achievement of their students?

The Learning With Technology Course is a 6-session course for teachers of grades 4 through 9. Going beyond the usual software lessons, this course will send teachers back to their classrooms with:

- Lesson plans and units that they created
- A written framework and the expertise to use it to create more lessons and units on their own
- A new network of colleagues to work with and learn from by means of specially created Internet web sites and listservs

For more information contact:

Kristin Smedley
North Central Regional Educational Laboratory
1900 Spring Road, Suite 300
Oak Brook, IL 60523-1480
(800) 356-2735, ext. 1269
e-mail: ksmedley@ncrel.org

VOLUME 1

The Technology Corner

Grades 9-12
No. 1

Captured Wisdom™ Videotape Library

Grades 4-8
No. 3

Captured Wisdom™ Videotape Library

Grades 4-8
No. 2

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Grades
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Captured Wisdom™ Videotape Library

OVERVIEW

Learning With Technology

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement (OERI)
Educational Resources Information Center (ERIC)

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