Chapter 1
What is Meaningful Learning?

- technology-as-teacher
- technology is hardware
- technology replaces the job of the teacher

Learning from Technology versus Learning with Technology

Attributes of Meaningful Learning
- Active
- Constructive
- Intentional
- Authentic
- Cooperative

How Technology Fosters Learning
- Causal
  - cause to effect: prediction
  - effect to cause: inference
- Analogical
  - analogies (similies, metaphors, syllogism)
  - compare/contrast
- Expressive
  - technology offers many ways to express what one knows
- Experiential
  - experiences are among most meaningful memories
- Problem Solving
  - decision making that comes with problem solving is meaningful
Use strategies to search the web

Evaluate

Triangulate sources

Intentional information searching

**Search Engines vs. Directories**

**Google**
- "use automated scripts known as robots that travel the Internet"

**Yahoo!**
- "lists Web pages in convenient categories and subcategories"

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**Chapter 2**
**Investigating With Technologies**

- Flexibility should be a characteristic of effective thinkers—both students and teachers.

- Students with the intention of learning can focus and decide what are good Web sites to use, but how does a teacher keep a student focused and on topic that is only trying to finish the assignment for points? (p. 16)
- How can all of the information about search engines and bookmarking Web sites be applied to Kindergarteners? (p. 16-21)
- The text suggests that cell phones may be used in the future as learning devices; would the phones be the students’ personal phones? What if a student can’t afford it? (p. 28-29)
- How would grading take place with the use of handhelds (by coming to the right conclusion, participation, etc.)?

- This freedom enables more authentic data collection, as students can take devices into the field to collect, record, and analyze information.”
- Even Kindergarten students can benefit from the freedom; groups of 3 or 4 students could be given a disposable camera to take pictures of insects or plants in a lesson on the ecosystem. The pictures could be developed onto a CD and the students could pick from the pictures they took to create a virtual ecosystem on the computer.

- Although the internet contains a wealth of information, it is little more than a virtual depository unless that information is transformed into knowledge through meaningful, reflective, active learning activities.”

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[http://www.binbin.net/photos/generic/the/the-original-metal-slinky-slinky-.jpg](http://www.binbin.net/photos/generic/the/the-original-metal-slinky-slinky-.jpg)

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Chapter 3
Experimenting With Technologies

“Microworlds provide learners with the observation and manipulation tools necessary for exploring and testing objects in their microworld.”

Examples: ThinkerTools; Bubble Dialog; Interactive Physics’ SimCalc

What is the minimum age group that the use of microworlds is aimed at?

“Causal Reasoning”

Testing
Speculating
Hypothesizing
Conjecturing
Experimenting

“The simulation designer builds a model of the phenomena or processes that enable learners to see how the system works.”

Examples: medical simulators; flight simulators; BioBlast; SimCity; SimQuest

“A virtual world is a realistic, three-dimensional computer simulation in which users identify themselves as an avatar while interacting with other users.”

Examples: Entropia Universe; Quest Atlantis (Unity World, Ecology World, & Healthy World)

How does grading take place with these types of learning activities?

“Games”

“The degree of meaningfulness of the learning from these games depends on the nature of the responses that are required.”

Examples: Pick-it!; Sid Meier’s Civilization

“Virtual Worlds”

“Psychosocial Moratorium” Principle
Committed Learning Principle
Identity Principle
Practice Principle
Probing Principle
Situated Meaning Principle
Multimodal Principle
Discovery Principle
Meaningful Learning with Games

Active, Critical Learning Principle
Semiotic Domains Principle
"Psychosocial Moratorium” Principle
Committed Learning Principle
Identity Principle
Practice Principle
Probing Principle
Situated Meaning Principle
Multimodal Principle
Discovery Principle
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Chapter 4
Supporting Writing with Technology

**Concept Mapping**

1. Brainstorm ideas
2. Arrange ideas into clusters
3. Elaborate newly organized map

Concept Maps can also be used as an initial support or template for structuring writing activities
- Constructing a persuasive argument
- Developing a research topic
- Organizing a presentation
- Writing a bibliography

**CAUTION** Students may treat templates as fill-in-the-blanks instead of using their own ideas!

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**Supporting Writing Organization and Planning**

**Supporting Presentation Writing**

**Supporting Creative Writing with Technology**

**Supporting Collaborative Writing with Technology**

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**Supporting Peer Feedback on Writing**

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**Setting Goals**

**Planning**

**Idea Organization**

**Composition of Text**

**Editing**

**Component Tasks of Writing**

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The text explains a scenario in which first graders create PowerPoint presentations; how much help does the teacher provide for young students?

In another scenario the book provides about PowerPoint, fourth graders are “adding” a PowerPoint to a list of other assignments for a project. The library media specialist says it isn’t optimal to just add technology for extra work, so couldn’t the teacher just drop the written report since the writing and information would be taken care of with the PowerPoint presentation?
Chapter 6: Community Building with Technologies

Primary Orality: “cultures have no knowledge of print or writing.”

Secondary Orality: “the capacity of electronic communication technologies to bridge and convey aspects of both oral and print cultures.”

“the talking drum”
Chapter 8

Designing With Technologies

Problem Solving vs Designing

1. Define the Problem
2. Develop alternative solutions
3. Select the solution
4. Implement and evaluate the solution

1. Identify a need or opportunity
2. Generate a design
3. Plan and make a solution
4. Evaluate and reflect on solution

Computer-Aided Design Software (CAD)

Problem Solving

Designing

SketchUp

TreStar Simulator

Simulation Software

iStopMotion

Programming Skills while Designing in the Media Arts

Computer-Aided Design Software (CAD)

GarageBand

Composition Software

Musical Sketch Pad

Logo

BASIC

Scratch

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Authentic and performance assessments consist of students actually doing something to show what they have learned. Students create or construct something, such as a newsletter alerting people about the dangers of littering and offering easy ways to recycle, instead of taking a multiple choice or true-false written test about pollution and conservation. Authentic and performance assessments allow students to show what they know in a creative way that fosters more learning and growth in the subject area.

Since many classrooms are pushing to find new ways of teaching students that revolve around technology, it only makes sense to use technology to assess the learning of students. There are many ways to assess student knowledge and learning using technology, including: electronic portfolios, technology-based rubrics, clicker assessment tools, and computer-based tests and surveys.

Electronic Portfolios
Electronic portfolios are a collection of technology-based learning activities, such as presentations, word processing documents, spreadsheets, and Web sites. The main types of portfolios are:

- Working portfolios in which students include their best work and can improve over time.
- Standards-based portfolios in which students create over varying amounts of time.
- External portfolios which are used to show external bodies that a certain criteria or criterion has/have been met.

Electronic portfolios are effective because they can be created by groups or individuals, they are transportable, searchable, and more easily modifiable. They allow students to be reflective, and they are compelling to students because they allow autonomy for the students.

Technology-Based Assessment Tools
Technology-based rubrics are beneficial to assessment because they provide clear standards and expectations of assessments for students, and teachers. Good rubrics have the following characteristics:

- All important elements are included.
- Each element is one-dimensional.
- Ratings are distinct, descriptive, and comprehensive.
- Ratings provide information about multiple aspects.
- Provisions information about multiple aspects.
- Avoids creating a contrived summary score.

Clicker assessment tools are television-remote type tools that allow students to quickly and easily answer questions asked by the teacher. They can be used for quick pretests, predictions of the outcome of the class demonstration or experiment, or to assess conceptual knowledge and higher-order learning outcomes. They are effective because they even the playing field by requiring all students to answer and being anonymous, they are learner-centered and they require students to be active in the classroom.

Computer-based tests are surveys are beneficial because they are done directly on the computer and can utilize strategies such as CAT (computerized adaptive testing). This allows tests to adapt to the needs of the learner.
How does assessment help your student?

Assessing Meaningful Learning with Technology

A Parent’s Guide to Assessment in the Classroom

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