The Many Faces of Technology : Cooperative Learning, the Multiple Intelligences, and the Computer

by Kathy Schrock (kathy@kathsychrock.net)

Itinerary

- Tapscott and the new generation of learners
- Kagan and cooperative learning theory
- Multiple intelligences theory
- Multiple intelligences technology assessment
- Software to address the various MI
- Multiple intelligences CL groupings

Interactive Learning

- New technologies lead to increased interactivity
- Students construct own knowledge based on experiences
- New ways of thinking about teaching and learning

Tapscott, Don. "Educating the Net Generation." *Educational Leadership*, February 1999, pp.6-11.

Learning Shifts

Linear	Hypermedia
Instruction	Construction
Teacher-centered	Learner-centered
Absorb material	Navigate material
School learning	Lifelong learning
One-size fits all	Customized learning
Teacher-transmitter	Teacher-facilitator

Linear → Hypermedia

- Traditional approaches to teaching and learning have been linear
- Access to information now is more interactive and non-sequential

Instruction → Construction

- Traditionally, teachers designed lessons and activities
- Now teachers work with learners to help them construct their own meaning.
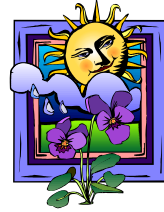
Teacher-centered → Learner-centered

- Teacher creates and structures what goes on in the classroom

- Teacher provides a framework

- Students discuss, debate, research, and collaborate with each other and the teacher

Absorb material → Navigate and use material

- Assess and analyze facts

- Synthesize the information and use it

- See the "big picture"

School learning → Lifelong learning

- Traditionally-- school to learn, work to do

- Workforce reinvents their knowledge base constantly

- Students need to be lifelong learners and accept this as the way it will be
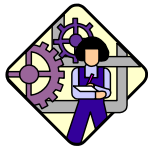
One-size fits all → Customized learning

- Customized learning
  - based on their background
  - based on their individual talents
  - based on their age level
  - based on their cognitive style
  - based on their interpersonal preferences

One size fits all

Teacher-transmitter → Teacher-facilitator

- Teacher as consultant
- Teacher as facilitator
- Teacher as technical consultant

- Observe students learning their own way and creating meaning using the tools

Kagan on Cooperative Learning

A set of instructional strategies which include cooperative student-student interaction over subject matter as an integral part of the learning process.

Leads to enhanced social skills, more self-directed activity, higher self-esteem.

Kagan on Cooperative Learning

- Increases the quality and quantity of tutoring and practice
- Students spend a great deal of practice on the items they most need to learn
- The task structure is well-delineated
- Interaction among students is encouraged
- The time-on-task continues to be high
- There are also frequent and immediate rewards

5 Elements of Cooperative Learning

- Team formation
- Sense of positive interdependence
- Individual accountability
- Social skill instruction
- Structure for lesson

Technology and CL

- Software and hardware allow kids to do what they do best.

- The authentic assessment is still designed by us, but each student can reach it in their own way, given the tools.

Gardner's Multiple Intelligences

Kinesthetic	Intrapersonal
body-smart	self-smart
Logical/Math	Interpersonal
number-smart	people-smart
Linguistic	Spatial
word-smart	picture-smart
Musical	Naturalist
music-smart	nature-smart

Traditional MI Assessments

- Bodily-kinesthetic written assessment
  - Do you like to play sports?
  - Do you like scary rides at the carnival?
  - Do you like biking and skateboarding?
- Logical-mathematical written assessment
  - Do you like to do math?
  - Do you like to use a computer?
  - Do you work on logic puzzles or play chess?

Traditional MI Assessments

- Linguistic written assessment
  - Do you like to read and write?
  - Do you like crossword puzzles?
  - Do you like to tell stories and jokes?
- Musical written assessment
  - Do you sing and hum a lot?
  - Do you play an instrument?
  - Do you easily remember the melodies of songs?

Traditional MI Assessments

- Intrapersonal written assessment
  - Do you like to spend time alone on projects?
  - Do you often think about your feelings?
- Interpersonal written assessment
  - Do you have lots of friends?
  - Do you like to know what is going on with everybody?
  - Do you like to get involved in group games?

Traditional MI Assessments

- Spatial written assessment
  - Do you do art activities in your free time?
  - Do you like to read maps and diagrams?
  - Do you like to design and build things?
- Naturalist written assessment
  - Do you spend a lot of time outdoors?
  - Do you like to take a walk in the woods?
  - Are you interested in endangered animals?

Technology MI Assessments

- Eight-station computer learning centers
- Software targeting each intelligence on a separate computer
- Completion of a specified task using all eight stations
- Student reflection on what was easiest and most enjoyable

Fifth Grade State Report

- Objective and tasks
  - To collect data about your assigned state and prepare a 10 minute PowerPoint presentation and a one page information sheet to hand out
  - Utilize all 8 computer stations and complete each task(s) as assigned for that station
  - Reflect on the part of the assignment you felt most and least comfortable with and why

Station 1: Logical-Mathematical

- Using the program found on this computer, create a database of topics that you want to collect information on for your report. Also keep bibliographic citations for all information you use.

- When you have completed the other seven stations, come back to this station to put together your PowerPoint presentation.

Station 2: Intrapersonal

- As you work on your project, use the word processor on this computer to keep a journal to yourself.

- Outline your thought processes, successes, and failures as you move through the other stations.

Station 3: Linguistic

- This computer is to be used for writing the script for your presentation using the word processing software and may also be used to record a soundtrack for the presentation using the attached microphone.

- You will also use the desktop publishing software on this machine to create your one-page informational handout

Station 4: Spatial

- Using the paint program found on this machine, the clipart disks, or the Internet, find or create pictures of your state symbols for inclusion in your presentation.

- Use only color pictures or photographs.

Station 5: Musical

- Using the MIDI keyboard attached to this computer, the sound effects disks, or sound files from the Internet, create a musical soundtrack for your presentation.

- Make sure the sound reflects the content being presented.

Station 6: Bodily-Kinesthetic

- Using the *Gryphon Bricks* program on this computer, create a 3-D graph of the four largest cities in your state. You may use the Legos by the computer to first build it by hand.

- Include the graph and data in your presentation.

Station 7: Naturalist

- Investigate additional facts about your state's natural symbols (i.e. bird, tree, flower, mammal, etc.) and include the information in your presentation

Station 8: Interpersonal

- Find the travel and tourism bureau for your state online, and write for information.

- Go to Web66, *http://web66.coled.umn.edu/schools.html* and find a student in a school in your state to write to for the length of the project. Ask him/her what important facts you should include.

Sample State Presentation

Massachusetts State Report

by Kathy Schrock

Database entries collected

http://www.ipl.org/youth/stateknow/ma1.html

- Population
- Capital
- Date of union entrance
- Motto
- Nickname
- Flower
- Bird
- Song

- Sports teams
- State tree
- State drink
- State insect
- State muffin
- State dog
- State marine mammal
- Famous people from MA

Quick Facts about MA

- Population in 1990
  - 6,041,000
- Capital: Boston
- Incorporated into Union
  - February 6, 1778
- Nickname
  - Bay State or Old Colony State
- State drink: Cranberry juice
- State muffin: Corn muffin

State motto:

By the sword we seek peace, but peace only under liberty

"All Hail to Massachusetts"
by Arthur J. Marsh, Official Song of the Commonwealth

All hail to Massachusetts, the land of the free and the brave!
For Bunker Hill and Charlestown, and flag we love to wave;
For Lexington and Concord, and the shot heard 'round the world;
All hail to Massachusetts, we'll keep her flag unfurled.
She stands upright for freedom's light that shines from sea to sea;
All hail to Massachusetts! Our country 'tis of thee!

All hail to grand old Bay State, the home of the bean and the cod,
Where pilgrims found a landing and gave their thanks to God.
A land of opportunity in the good old U.S.A.
Where men live long and prosper, and people come to stay.
Don't sell her short but learn to court her industry and stride;
All hail to grand old Bay State! The land of pilgrim's pride!

All hail to Massachusetts, renowned in the Hall of Fame!
How proudly wave her banners emblazoned with her name!
In unity and brotherhood, sons and daughters go hand in hand;
All hail to Massachusetts, there is no finer land!
It's M-A-S-S-A-C-H-U-S-E-T-T-S.
All hail to Massachusetts! All hail! All hail! All hail!

http://www.fortunecity.com/tinpan/pettruciani/35/Massachusetts.mid

Political Map of MA

Multimedia US Atlas. CD-ROM. Software Toolworks, 1992.

Topographical Map of MA

http://fermi.jhuapl.edu/states/maps1/ma.gif

Four Largest Cities

=50,000 residents (1996)

Boston
Worcester
Springfield
Brockton

550,000
450,000
350,000
250,000
150,000
50,000
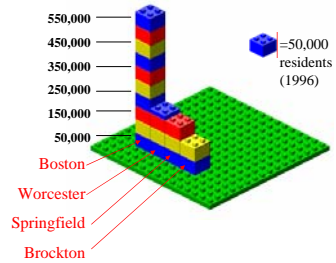
Presidents from Massachusetts

John Adams, 1797-1801

John F. Kennedy, 1961-1963

George Bush, 1989-1993

John Quincy Adams, 1825-1829

http://www.whitehouse.gov/WH/glimpse/presidents/html/presidents.html

State Tree: American Elm
Ulmus americana

Trees may attain a height of 80'.

The diameter ranges from 1-2 feet.

The buds are slightly more than 1/4" long and the leaves are from 4-7" long.

American Elm flowers between March and May.

http://www.gypsymoth.ento.vt.edu/~ravlin/Treeimages/elm_amer.html

State Bird: Chickadee
Parus atricapillus

Year-round residents in Alaska, Canada, and the northern half of the U.S.

Eat a variety of foods including insect eggs, ants, beetles, aphids, millipedes, snails, and other small creatures.

Live in mixed hardwood-coniferous forests.

http://www.tc.cornell.edu/Birds/black.capped.chickadee.html

State Insect: Ladybug
Harmonia axyridis

An adult female Lady Beetle may consume up to 75 aphids a day while the smaller male may consume up to 40.

Their red or orange and black coloration warns birds that they would not make a very tasty meal.

They live in trees, shrubs, fields, beaches, and even houses

http://home.ptd.net/~insect/ladybug.html

State Marine Mammal: Right Whale
Eubalaena glacialis

- A large black whale with a large head, a thick lower lip, and white spots on the belly.
- Males measure up to 14.6 meters, while the maximum length of females is 16.5 meters.
- Endangered species.

http://www-nais.ccrs.nrcan.gc.ca/schoolnet/issues/risk/marine/emarine/rghtwhle.html

State Flower: Mayflower
Epigaea repens

- Comes out in the early spring.
- The flowers are very fragrant.
- It is protected in many states because it is almost extinct.
- Hard to grow.

Common Wildflowers of the Northeastern United States.
NY: Barrons, 1979.
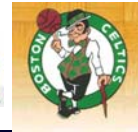
State Dog: Boston Terrier

- The result of a cross between an English Bulldog and a white English Terrier
- Breed started in Boston in 1870
- Good companion and house pet
- Sometimes called "the American gentleman" among dogs.

http://w3.mgr.com/mgr/howell/bobpages/breeds/bos_terr.htm

Massachusetts Sports Teams

End of Sample Project

After the Report

- Ask students to reflect on what they did best and liked best at all the stations
- Look at their finished products to see where you think their strengths lie
- Create cooperative learning groups by like or unlike intelligences to meet the needs of the learners

It's Just Another Tool

- Helps students see their strengths and weaknesses

- Individualizes instruction and assessment

- Allows student to attain success in their own way

- Leads to experimentation

Tapscott, Don. "Educating the Net Generation". *Educational Leadership.* ASCD. February 1999, pp. 6-11.

Kagan, Spencer. *Cooperative Learning Resources for Teachers.* CA: Resources for Teachers, 1990.

Armstrong, Thomas. *Multiple Intelligences in the Classroom.* Alexandria,VA: ASCD, 1994. (*www.ThomasArmstrong.com*)

The End