21st Century Skills in the Elementary Standards-Based Classroom

Dr. Debbie Powell
University of North Carolina Wilmington
A Day in a 21\textsuperscript{st} Century Classroom

8:30-9:15  The Integrated Component (Content Learning)
• About 6 units a year built around the NC Standards
• Inquiry predominate mode of instruction
• Organized around a “big idea” or significant content
• Incorporates 21\textsuperscript{st} Century content, skills and dispositions
• At least once a year, children are involved in a service learning project or a real community problem

9:15-10:00  Reading Workshop
• Shared & Guided Reading; whole class mini lesson
• 10:00-10:15  Recess
10:15-11:00  Writing Workshop
• Independent Reading; Literature Groups
11:00-11:45  Reading Workshop
• Independent Reading; Literature Groups

11:45-12:30  Lunch and Recess
12:30-12:45  Read Aloud
12:45-1:45  Math Workshop
1:45-2:45  Special Classes: Art, Music, PE, etc.
2:45 – 3:00  Class meeting, clean up
3:00  Dismissal
Youtube Videos on 21st Century

A vision of K-12 students today:
http://www.youtube.com/watch?v=A-ZVCjfWf8

21st Century: What Will It Look Like?
http://www.youtube.com/watch?v=c1KEFgD6Dtg

21 Century Pedagogy
http://www.youtube.com/watch?v=l72UFXqa8ZU
What “Skills” are 21st Century?

- Critical-thinking and problem-solving skills
- Communication and collaboration skills
- Creativity and innovation skills
- Information and communications technology literacy
- Contextual learning skills
- Information & media literacy skills

http://www.21stcenturyskills.org/index.php?Itemid=40&id=82&option=com_content&task=view
“Content” of 21st Century Core Curriculum +

- Global awareness
- Financial, economic, business and entrepreneurial literacy
- Civic Literacy
- Environmental awareness
What Happens to the Air Pressure?

As you go higher in altitude, air pressure decreases steadily. Air pressure is the force put on a given area by the weight of the air above it. Air is a mixture of gases. It is made mostly of molecules of nitrogen and oxygen. Molecules are the smallest pieces that a substance can be broken into without changing what the substance is.

The molecules have mass. They are attracted to the Earth by gravity, so they have weight. Normal air pressure is greatest at sea level. There the column of air extending above the surface to the top of the atmosphere is tallest. Sea level air pressure is about 1.04 kilograms per square centimeter (14.7 pounds per square inch). As you go higher in the altitude, the height of the column above you becomes shorter. Therefore the weight of that column—or air pressure—becomes less.

Air pressure depends on the weight of its molecules pressing down on a given area. Molecules are closer together, or more dense, at sea level than higher in the atmosphere. Denser air weighs more than an equal volume of less dense air and pushes down harder. That is why air pressure is higher at sea level than high in the atmosphere.

An Inquiry Model for Teaching & Learning

Teacher Determines "Big Understandings" from Curricular Sources

- Curriculum Documents NCSCS
- Textbooks
- Supplemental Materials/Resources
- Life Problems & Social Issues
- Teachers’ knowledge & Experiences

Plans Culminating Assessment

Plans Activities

Establishes Climate

Teacher Plans Mediation Between Big Understanding/Processes & Students’ Characteristics/Needs

Conceptual Understanding comes BEFORE Comprehension
1 Engagement Phase

Teacher Provides Stimuli, Assesses Prior Knowledge, Creates Disequilibrium and a “Need to Know”

Characteristics of Initiating Activities

- Meaningful & Purposeful
- Promotes Curiosity, Doubt & Disequilibrium
- Reasonable & Attainable

Students Develop Purpose/Ownership/Responsibility, Pose Questions and Select Strategies & Resources.
2 Exploration Phase

Learner employs knowledge/strategies for gathering & organizing info to reconcile doubt, solve problems, & make decisions.

Teacher monitors interaction/activities and introduces new strategies and new materials (info) when needed.

Learner approximates new strategies to resolve doubt

Content
- Science
- Reading
- Writing
- Social Studies
- Observing

Processes
- Decision making/Critical thinking skills/Creativity
- Math skills
- Hypothesizing
- Problem solving
- Categorization
- Demonstrations

Learner requires:
- Appropriate feedback
- Encouragement to take risks
- Opportunities to self-reflect

Using technology and media sources throughout the exploration
3 Explanation Phase

Students Share Their Understandings, Use of Strategies/Skills, and Express Attitudes

Teacher Assesses and Further Directs student learning by Clarifying Misconceptions, Providing Vocabulary for Concepts, and Suggesting Further Learning Experiences

Interaction with:
- Peers
- Self
- Community Members

Clarification of Big Understanding and Processes through:
- Art
- Music
- Talk
- Drama
- Peer Teaching
- Writing

Further Reading for Clarification
4 Elaboration Phase

Students present and defend elaborated explanations through:

Students apply big understanding to their world. They reflect on their own explanations to now explain familiar phenomena which they previously have not understood.

Students develop new purposes for further exploration, elaboration, extension, & application

Math  Music  Art  Writing  Talk  Drama

Cycle Continues
Sites for Problems and Global Connections

Creating a Flat Classroom (great site from a classroom teacher)
http://academyofdiscovery.wikispaces.com/Creating+Classrooms

e-pals (check out projects)
http://www.epals.com/international/index.tpl?sessf=112829

eMINTS National Center http://www.emints.org/join.shtml

eThemes http://www.emints.org/ethemes/

Students in service to America (scroll down a ways for some good sites)
http://www.studentsinservicetoamerica.org/tools_resources/national.html

Global School Net http://www.globalschoolnet.org/index.cfm

Captain Planet http://www.captainplanetdn.org/aboutUs.html

Carnegie Mellon http://www.etc.cmu.edu/projects/currentprojects.php

Kids for Saving Earth http://www.kidsforsavingearth.org/programs.html

Edutopia http://www.edutopia.org/start-pyramid