

Integrating ICT into the Science Curriculum: Strategies to Support K-8 Learning of Science Skills and Concepts

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<http://www.handy4class.com/stao2008/>
http://www.handy4class.com/activity_types/

Are you ready for her?



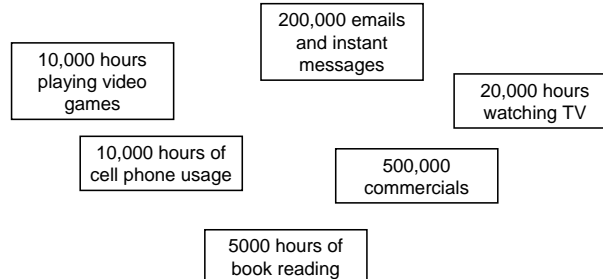
Hewlett Packard print commercials (2003)

Southwestern Bell Telephone Book, 2005



Like all first graders, Lindsay has her favorite color, favorite animal, and favorite MP3 downloading software.

Digital Natives

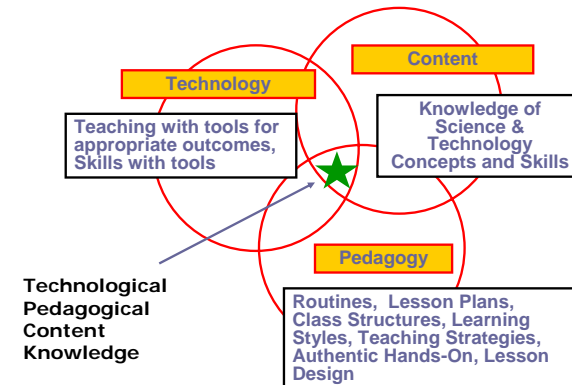


Prensky, M. (2004). Capturing the Value of "Generation Tech" Employees. *Strategy +Business*.
<http://www.strategy-business.com/press/enewsarticle/enews063004?pg=all>

Integrating Technology??



Teaching with Technology



Three Simple Rules . . .

- Authentic tasks
- No more than 5 new skills at a time; chunking into steps (acronyms)
- Activity Types to meet learning outcomes



Authentic Uses for Technology



Research

Background Information, Facts, Concepts
Information gathering

Authentic Uses for Technology



Data Collection & Analysis

Information analysis—collecting, organizing, and analyzing data

Authentic Uses for Technology



Communication

Reading, Writing, and Publishing/Presenting
Direct Communication via email, listservs, newsgroups
or
Publishing—desktop publishing, web publication, or multimedia presentations of information

Authentic Uses for Technology



EDU-tainment

Entertainment for Educational Purposes
via
games, skill games, reading of current or popular materials, watching presentations, videos, or animations, listening to music, and shopping

Only 5 skills per lesson

- Teaching content not technology
- More than 5 new skills—teaching THE tool
- Chunk the process into steps (acronyms)
- Sequence activities to teach needed skills



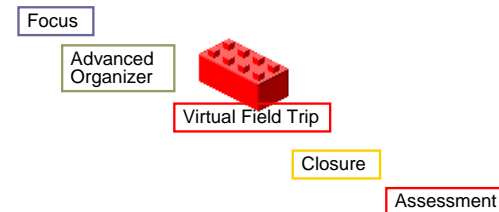
Activity Types

- Activity types = Thinking tools for lesson design
- Characteristics of activity types that integrate technology
 - Few BASIC technology skills
 - Adaptable for many grade levels/subjects
- Example: Journal, KWL Chart



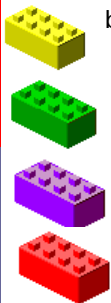
Activity Types

- Think of an activity type as a building block
- If you know ONE activity, you can build a lesson around it

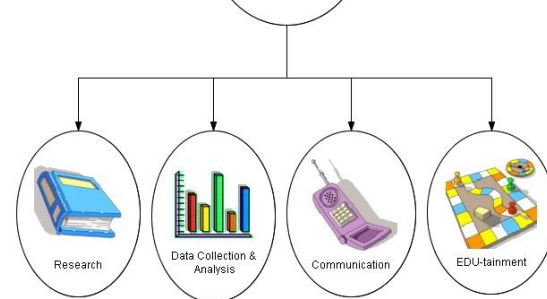


Activity Types


- Think of an activity type as a building block
- BUT if you have LOTS of blocks, you can build many items



Baker's Dozen



Research




Research

Research

#1: Life Systems: Grade 3 – Growth & Changes in Plants

- Identify the major parts of plants, including root, stem, flower, stamen, pistil, leaf, seed, and fruit, and describe how each contributes to the plant's survival within the plant's environment
- Centres or Group Work
- [Edublog Linklist](http://scienceisfun4us.blogspot.com/)

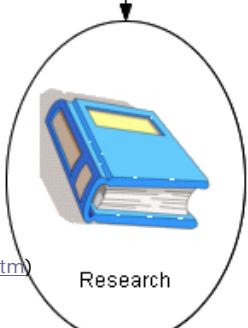


Research

Research

#2: Life Systems: Grade 5 – Human Organ Systems

- Describe the basic structure and function of the major organs
- Centres or Group Work
- [Treasure Hunt](http://homepage.mac.com/cohora/ext/body.htm)
- [Scavenger Hunt](http://www.kidshealth.org/kid/closet/games/scavenger_hunt_questions.html)

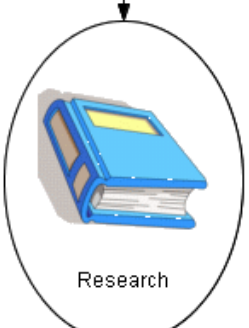


Research

Research

#3: Life Systems: Grade 4 – Habitats and Communities

- Describe structural adaptations that allow plants and animals to survive in specific habitats
- Centres or Group Work
- [Virtual Field Trip](http://www.efieldtrips.org/Bats/index.htm)



Research

Creating your own Internet Hunts



Creating Blogs: Step 1

- <http://www.blogger.com>



Creating Blogs: Step 2

- Create your Google account if you don't already have one!

1 Create a Google Account

This process will create a Google account that you can use on other Google services. If you already have a Google account perhaps from Gmail, Google Groups, or Orkut, please [sign in first](#).

Email address (must already exist) You'll use this address to log in to Blogger and other Google services. We'll never share it with third parties without your permission.

Enter a password Must be at least 9 characters long.

Retype password [Password strength](#)

Display name The name used to sign your blog posts.

Word Verification Type the characters you see in the picture to the left.

Acceptance of Terms I accept the [Terms of Service](#). Indicate that you have read and understand Blogger's Terms of Service.

CONTINUE →

Creating Blogs: Step 3

- Name your blog!

2 Name your blog

Blog title Enter a title for your blog.

Blog address (URL) http://. You and others will use this to read and link to your blog.

[Check Availability](#)

OR

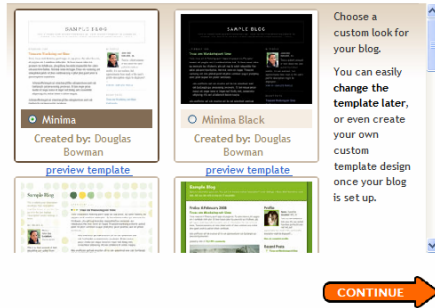
Advanced Setup Want to host your blog somewhere else? Try [Advanced Blog Setup](#). This will allow you to host your blog somewhere other than Blogspot.

CONTINUE →

Creating Blogs: Step 4

- Pick a template!

2 Choose a **template**



Choose a custom look for your blog. You can easily change the template later, or even create your own custom template design once your blog is set up.

CONTINUE

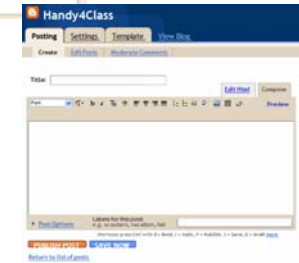
Creating Blogs: Step 5

! Your **blog** has been created!

We've just created a blog for you. You can now add your posts to it, create your personal profile, or customize how your blog looks.

START POSTING

- Write your first post!



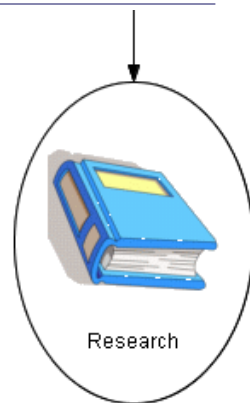
#4: Life Systems: Grade 2 – Properties of Liquids and Solids

- Describe characteristics of the three states of water, and identify the conditions that cause changes from one state to another
- Centres or Group Work

- [WebQuest](#)

<http://yorkcountyschools.org/mes/what's%20the%20matter%20webquest/index.htm>

Research



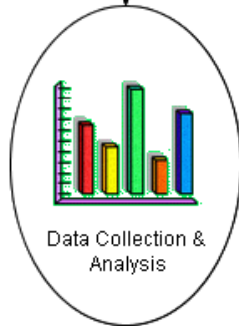
WebQuest.Org

- Search for appropriate WebQuests

<http://www.webquest.org/>

- Create your own WebQuests with QuestGarden (Click on “Create WebQuests”)

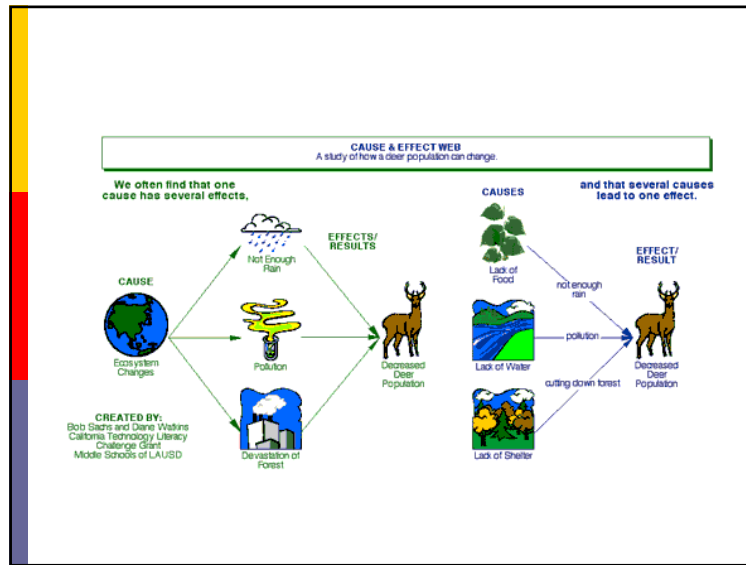
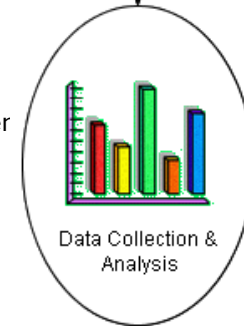
Data Collection & Analysis



Data Collection & Analysis

#5: Life Systems: Grade 7 – Interactions in the Environment

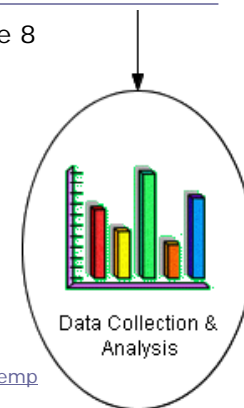
- Identify biotic and abiotic elements in an ecosystem, and describe the interactions between them
- Brainstorming
- Inspiration/Smart Ideas
- [Concept Web](#)



Data Collection & Analysis

#6: Earth & Space Systems: Grade 8 – Water Systems

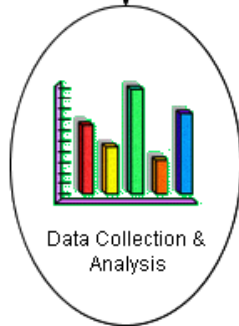
- Demonstrate an understanding of the characteristics of the earth's water systems and the influence of water systems on a specific region.
- Predict local weather patterns using data from their own observations
- Excel
- [Data Plotting/Chart](http://www.internet4classrooms.com/24hr_temp_chart.xls)
(http://www.internet4classrooms.com/24hr_temp_chart.xls)



Data Collection & Analysis

#7: Life Systems: Grade 7 – Interactions in the Environment

- Describe ways in which human activities and technologies alter balances and interactions in the environment
- Problem solving with data
- Tinkerplots
- [Database Investigation](#)



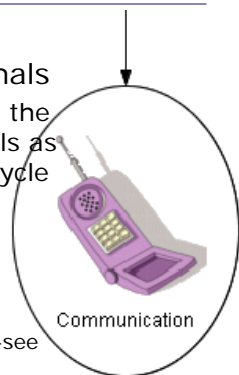
Communication



Communication

#Life Systems: Grade 2 – Growth and Changes in Animals

- Observe and compare changes in the appearance and activity of animals as they go through a complete life cycle
- Project-based learning
- eBooks using Multimedia
 - #8: [Time Lapse](#) (MovieMaker)
 - #9: [Digital Collection](#) (PowerPoint-see slides 41-45)
 - #10: [Roundhouse](#) (PowerPoint- see slides 46-52)



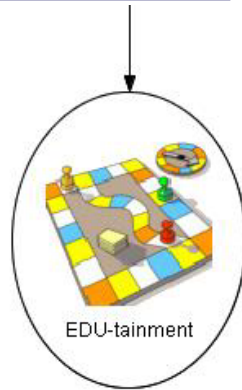
Communication

Differentiating with:

- [Online Tools](http://www.readwritethink.org/materials/animal-inquiry/)
(<http://www.readwritethink.org/materials/animal-inquiry/>)
- Clicker
- [Podcasts](http://science.nasa.gov/headlines/y2007/09nov_hirad.htm)
(http://science.nasa.gov/headlines/y2007/09nov_hirad.htm)
- Digital camera
- Microphone/headphone



EDU-tainment



EDU-tainment

Information gathering,
Application, Review &
Reinforcement, Vocabulary

■ #11: Video

■ **Video Clips**

(<http://edcommunity.apple.com/ali/story.php?itemID=595>)

■ **United Streaming**

(<http://www.unitedstreaming.com>)

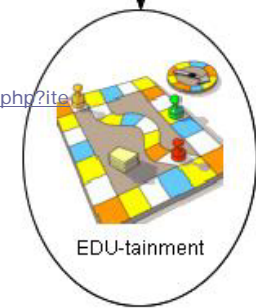
■ **YouTube**

(<http://www.youtube.com>)

■ #12: Podcasts

■ **Discovery Channel**

(<http://www.discovery.com/radio/podcasts.html>)

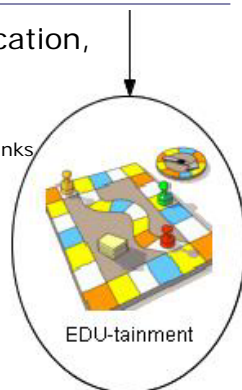


EDU-tainment

Information gathering, Application,
Review & Reinforcement,
Vocabulary

■ #13: Games & Simulations (see links
on Handy4class.com)

- [Read/Write/Think/](#)
- [The Virtual Body: Cells Alive](#)
- [Build a Volcano](#)
- [Electricity](#)
- [Explore Learning](#)



Questions??



<http://www.handy4class.com/stao2008/>

http://www.handy4class.com/activity_types/

Flowering Plants of Texas: A
Digital Collection

Liriope



Dusty Miller



Daisy



Rose

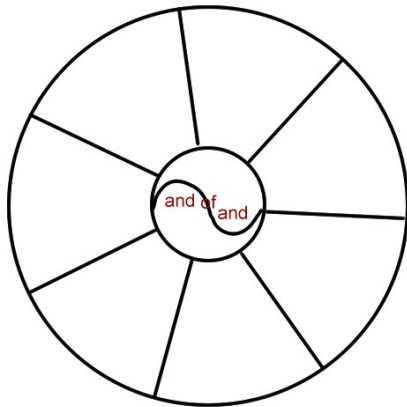


What is a Roundhouse diagram?

- Iconic mapping (represent knowledge visually)
- Process for learning conceptual information
- Blends prior knowledge with new knowledge



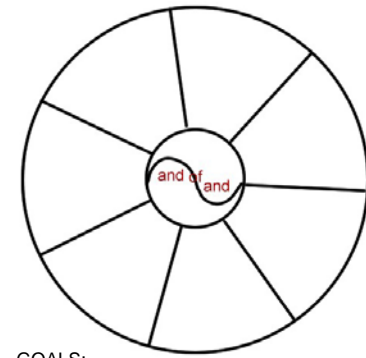
Blank Roundhouse Diagram



GOALS:

What did you see?

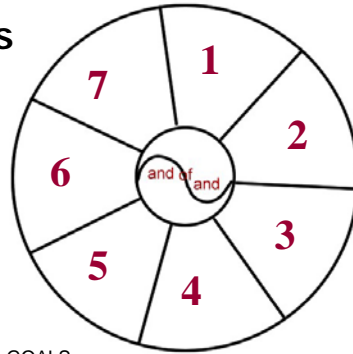
- A CIRCLE**
 - 2D figure
 - Field of vision
 - Inner circle



GOALS:

What did you see?

- A CIRCLE
- SEVEN SECTIONS



GOALS:

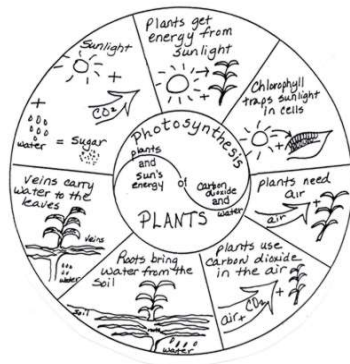
What did you see?

- A CIRCLE
- SEVEN SECTIONS
- GOALS

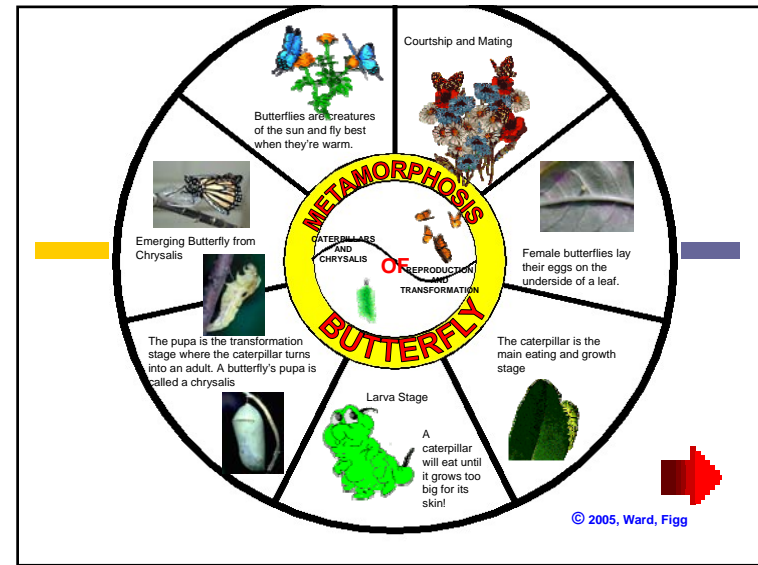


GOALS:

Student Created Sample



Goals: To show what occurs during photosynthesis.



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