

The Savvy Cyber Professor

Internet-Based Activities for Higher Education

Infusing Technology into Community College Courses

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Project Team



CIESE Background

- Established in 1988
- Pioneer (1993) in Internet in education
- Over \$20 million in grants and contracts
- Programs in AZ, OH, FL, NJ, NY & Latin America
- Over 18,000 educators trained



Curriculum Expertise



*Inquiry-based
Real-time data*



Engaging problems



Telecollaborative

Authentic Learning



The Human Genetics Project



- Curved Thumb
- White Forelock
- Attached Earlobes
- Bent Pinky

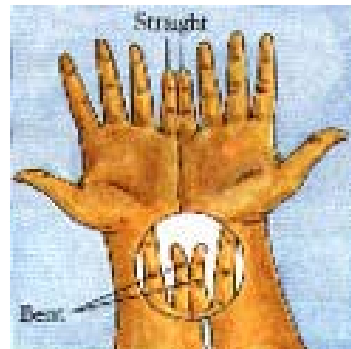
The Human Genetics Project

free vs. attached earlobes



straight vs. curved thumbs

straight vs. bent pinkies



with vs. without white forelock

The Human Genetics Project

In a given population, is the dominant trait the most frequently occurring?



The Human Genetics Project



Was your hypothesis correct?

Will you remember this better as a result?

CIESE Essential Question:

How are educators using the Internet as an educational tool?



Internet-based Applications

Publishing
Student Lab
Reports online

Finding Lesson
Plans

e-Pal Exchanges,
Telecollaborative
projects

Publishing Student
Stories to the Web

WebQuests

Simulations

Virtual Labs
*(Interactive
Frog Dissection)*

Historical
Diaries

Weather
Satellite images

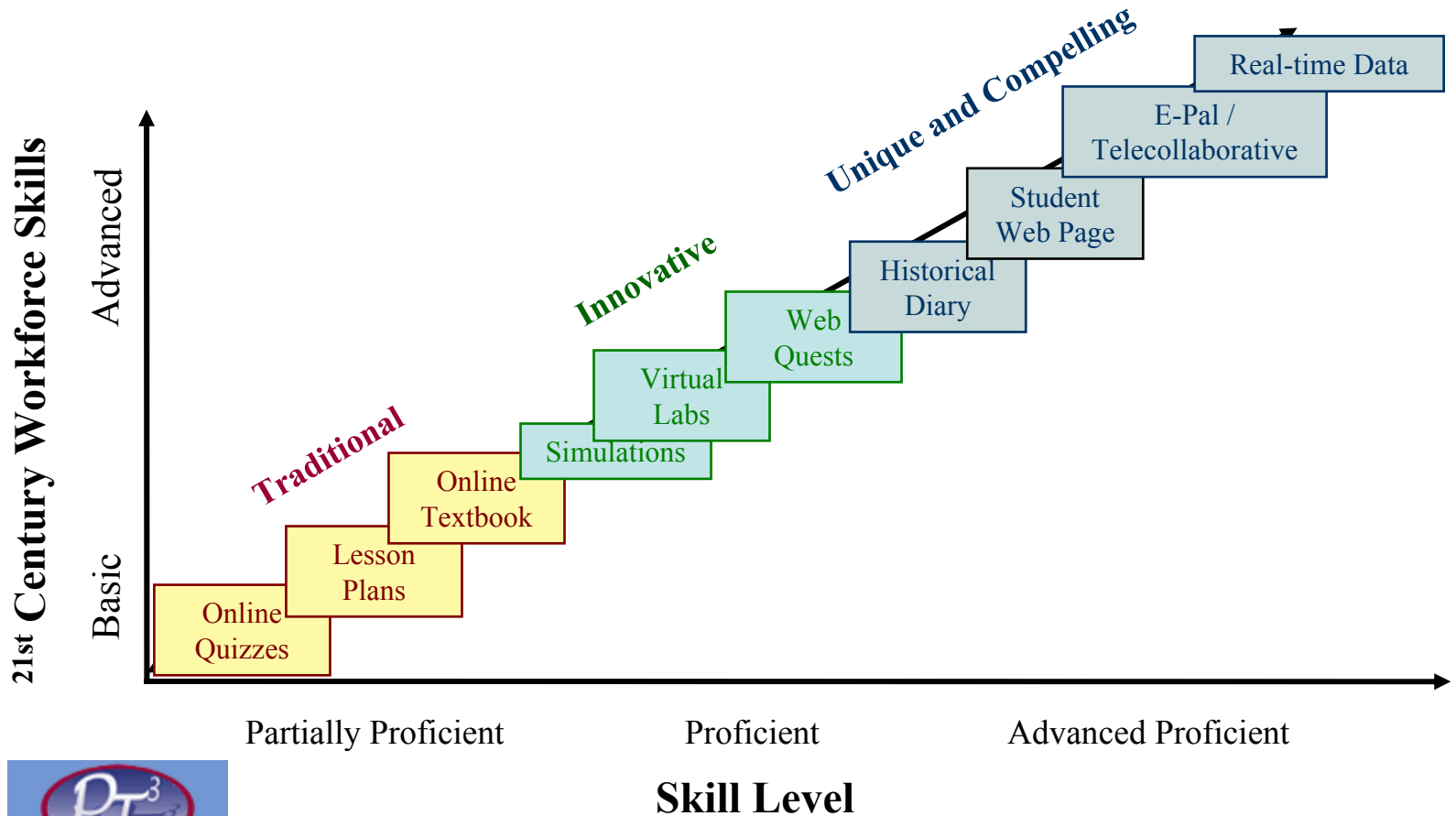
Using
Online
Quizzes

Online
Textbook

Real-time data



Internet-based Applications



Unique & Compelling Applications

Internet applications can provide a revolutionary new instructional tool that can create opportunities for students to engage in more authentic learning.

Unique

Cannot be done without
Internet technology

Compelling

Provides students with real world
learning experiences



Unique & Compelling Applications

Use the Internet as a...
Communication Tool
 to connect *with experts & other students from around the world:*



- Ask-an-Expert
- Telementoring
- Telecollaborative Projects

Unique & Compelling Applications

Use the Internet to... Access Real Time Data

*to problem-solve and
think critically:*

- Weather Satellite Images
- Remote Sensing Data
- Scientific Databases



Unique & Compelling Applications

Use the Internet to...

Access Primary Source Materials

*Historical documents from the
Library of Congress and
National Archives*

- Diaries
- Historical Photographs
- Multidisciplinary Lessons



Unique & Compelling Applications

Use the Internet to... Publish Student Work

Students can engage real audiences about what they are learning and doing.



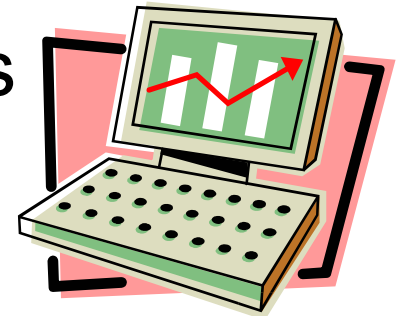
Savvy Cyber Professor

- Adapts a proven set of K-12 training & curricula materials for use in community colleges
- 26-hour, 8 session hybrid professional development program
- Focus on real-world applications in science, math, educational technology, & language arts
- Library of Real World Learning Objects (RWLOs)
- Instruction for the development and use of RWLOs



Real World Learning Objects (RWLOs)

- Concise core instructional activities focused on discrete topics in higher ed
- Science, math, ed tech and lang. arts
- Incorporate Internet-based “unique & compelling” activities
- Easily used in similar courses at other institutions





Real World Learning Objects

Internet-based Activities for Higher Education

Science

Today's classroom

A plane is flying due west at 125 km/h.

There is a wind blowing from the south at 35 km/h.
What is the plane's resultant velocity?

Tomorrow's classroom

Relative Velocity and Vectors

Learn how to do vector analysis using real time flight and wind data





Real World Learning Objects

Internet-based Activities for Higher Education

Mathematics

Today's classroom

Graph the function
 $y = 2x^2 - 3x - 2$

What is the domain & range for this function? Find the x and y intercepts and the maximum or minimum point.



Tomorrow's classroom

Polynomial Functions & Mathematical Modeling

Plot data collected from the Global Sun - Temperature telecollaborative project and determine the mathematical function that best describes the model.



Real World Learning Objects

Internet-based Activities for Higher Education

Language Arts

Today's classroom

Create and submit a poem for instructor to review. Based on feedback and editorial criticism from instructor, revise poem.

Tomorrow's classroom

Understanding the Writing Process

Review how Walt Whitman revised and refined his ideas and poems by viewing his original notebooks.





Real World Learning Objects

Internet-based Activities for Higher Education

Educational Technology

Today's classroom

Use a tutorial to learn the graphing features of Excel. Practice making each of the graphs and charts one by one.



Tomorrow's classroom

Use Excel to Create a Climatogram

Download and enter real climate data for your city into Excel to create a climatogram. Analyze the chart to determine the "best" and "worst" times of the year to visit your city.

Savvy Cyber Professor Goals

- Learn & incorporate new strategies for teaching
- Use and create RWLOs for use in CC courses
- Ultimately: Model new teaching strategies to pre-service teachers





Session Overview

- **Session 1:** Leveraging the Internet for Learning
- **Session 2:** Introduction to eDesk and Community Tools (online)
- **Session 3:** Using Learning Objects for Meaningful Instruction (online)
- **Session 4:** Course Integration (online)



Session Overview



- **Session 5:** Implementation: Challenges & Solutions (online)
- **Session 6:** Assembling Instructional Content & Creating RWLOs (online)
- **Session 7:** Completion of RWLOs
- **Session 8:** Showcase of RWLOs



How to Get Involved

- Savvy Cyber Professor v 1.0 release - Spring 2005
- 30 CC's selected by competitive RFP (4 faculty per CC)
- 12 CC – Fall 2005
- 18 CC – Spring 2006



Savvy Cyber Teacher®



- Teacher professional development program
- Enhances science & math education
- Focus on content and implementation of unique & compelling resources



Evaluation Findings

Savvy Cyber Teachers[®] report:

- Better at teaching problem-solving skills
- Spend less time lecturing
- Teach complex concepts
- Conduct small group learning activities
- Implement cooperative learning
- Manage diverse learning styles

SOURCE: Harcourt Educational Measurement



Evaluation Findings

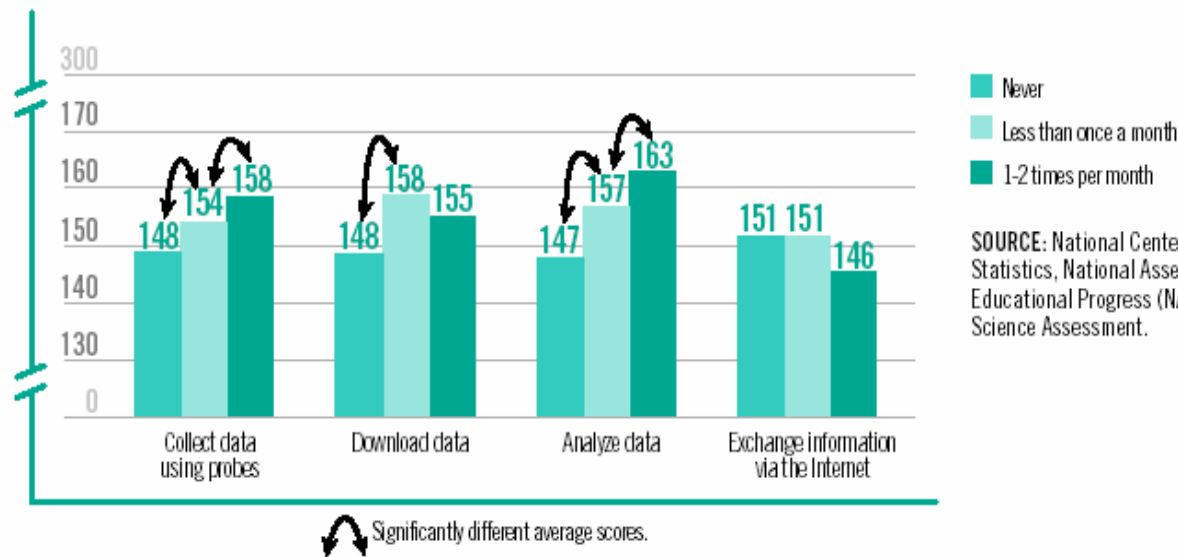
- Student Impact Study conducted in Spring 2002 in Cleveland, Miami, & Phoenix
- 35 teachers, 4 computer specialists, 1389 students in grades 2-11
- Measured student pre- & post-test scores during implementation of unique & compelling project
- Student Impact Study Results:
 - ***86% of students showed noteworthy gains in science and mathematics learning objectives***



SOURCE: Harcourt Educational Measurement

Research Findings

Average Scores by Types of Computer Use, Students Taking Science Courses, Grade 12: 2000



“Twelfth-grade students who reported using computers to collect data, download data, or analyze data had higher average scores than students who reported never doing so.”



For More Information

Pathways Project Web Site

<http://www.k12science.org/pathways/>

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