## Making the Difference:

Creating a Blended Setting to Educate Every Student

Bob Tozier, Pittsburgh, PA



# Educational Theory Applied to Technology





## Blended Learning

- Online learning has mainly been doing the same thing in class, online
- Synchronous | asynchronous discussions
- Peer-to-peer learning exercises
- Online learning enhances traditional face-to-face learning



ASCD

2011 ANNUAL CONFERENCE & EXHIBIT SHOW

Until recently, online learning has mainly been a traditional lecture format adapted for the web. But newer, social and multimedia technologies are allowing online tools to evolve to offer more active and interactive lessons. No longer is online learning just reading a module and answering questions — it can now include synchronous or asynchronous discussions and peer-to-peer learning exercises.

As a result, online learning is becoming a more useful tool to enhance traditional face-to-face learning.

# Gagne's Conditions of Learning Theory

- "The focus of the theory is on intellectual skills" (Kearsley, 1994a)
- Gagne linked learning outcomes with instructional designs



### ASCD

### 2011 ANNUAL CONFERENCE & EXHIBIT SHOW

- **1. Gain attention.** Present a problem or a new situation. Use an "interest device" that grabs the learner's attention. This can be thought of as a *teaser* -- the short segment shown in a TV show right before the opening credits that is designed to keep you watching and listening). The ideal is to grab the learners' attention so that they will watch and listen, while you present the learning point. You can use such devices as:
  - Storytelling
  - Demonstrations
  - Presenting a problem to be solved
  - Doing something the wrong way (the instruction would then show how to do it the right way)
  - Why it is important
- 2. Inform learner of Objective. This allows the learner's to organize their thoughts and around what they are about to see, hear, and/ or do. There is a saying in the training filed to 1) tell them what you're going to tell them, 2) tell them, and 3) tell them what you told them. This cues them and then provides a review which has proven to be effective. e.g. describe the goal of a lesson, state what the learners will be able to accomplish and how they will be able to use the knowledge.
- **3. Stimulate recall of prior knowledge.**This allows the learners to build on their previous knowledge or skills. Although we are capable of having our "creative" minutes, it is much easier to build on what we already know. e.g. remind the learners of prior knowledge relevant to the current lesson, provide the learners with a framework that helps learning and remembering.
- **4. Present the material.** Chunk the information to avoid <u>memory</u> overload. Blend the information to aid in information recall. This is directly related to Skinner's "sequenced learning events." This allows learners to receive feedback on individualized tasks, thereby correcting isolated problems rather than having little idea of where the root of the learning challenge lies. <u>Bloom's Taxonomy</u> and <u>Learning Strategies</u> can be used to help sequence the lesson by helping you chunk them into levels of difficulty.
- **5. Provide guidance for learning.**This is not the presentation of content, but are instructions on how to learn. This is normally simpler and easier than the subject matter or content. It uses a different channel or media to avoid mixing it with the subject matter. The rate of learning increases because learners are less likely to lose time or become frustrated by basing performance on incorrect facts or poorly understood concepts.
- **6. Elicit performance.** Practice by letting the learner do something with the newly acquired behavior, skills, or knowledge
- **7. Provide feedback**. Show correctness of the learner's response, analyze learner's behavior. This can be a test, quiz, or verbal comments. The <u>feedback</u> needs to be specific, not, "you are doing a good job" Tell them "why" they are doing a good job or provide specific guidance.
- **8. Assess performance.** Test to determine if the lesson has been learned. Can also give general progress information
- **9. Enhance retention and transfer.** Inform the learner about similar problem situations, provide additional practice, put the learner in a <u>transfer situation</u>, review the lesson.

# Gagne's Nine Instructional Events

- Gaining attention (Reception)
- Informing learners of the objective (Expectancy)
- Stimulating recall of prior learning (Retrieval)
- Presenting the stimulus (Selective Perception)
- Providing learning guidance (Semantic Encoding)
- Eliciting performance (Responding)
- Providing feedback (Reinforcement)
- Assessing performance (Retrieval)
- Enhancing retention and transfer (Generalization)

ASCD

### 2011 ANNUAL CONFERENCE & EXHIBIT SHOW

- **1. Gain attention.** Present a problem or a new situation. Use an "interest device" that grabs the learner's attention. This can be thought of as a *teaser* -- the short segment shown in a TV show right before the opening credits that is designed to keep you watching and listening). The ideal is to grab the learners' attention so that they will watch and listen, while you present the learning point. You can use such devices as:
  - Storytelling
  - Demonstrations
  - Presenting a problem to be solved
  - Doing something the wrong way (the instruction would then show how to do it the right way)
  - Why it is important
- 2. Inform learner of Objective. This allows the learner's to organize their thoughts and around what they are about to see, hear, and/ or do. There is a saying in the training filed to 1) tell them what you're going to tell them, 2) tell them, and 3) tell them what you told them. This cues them and then provides a review which has proven to be effective. e.g. describe the goal of a lesson, state what the learners will be able to accomplish and how they will be able to use the knowledge.
- **3. Stimulate recall of prior knowledge.** This allows the learners to build on their previous knowledge or skills. Although we are capable of having our "creative" minutes, it is much easier to build on what we already know. e.g. remind the learners of prior knowledge relevant to the current lesson, provide the learners with a framework that helps learning and remembering.
- **4. Present the material.** Chunk the information to avoid <u>memory</u> overload. Blend the information to aid in information recall. This is directly related to Skinner's "sequenced learning events." This allows learners to receive feedback on individualized tasks, thereby correcting isolated problems rather than having little idea of where the root of the learning challenge lies. <u>Bloom's Taxonomy</u> and <u>Learning Strategies</u> can be used to help sequence the lesson by helping you chunk them into levels of difficulty.
- **5. Provide guidance for learning.** This is not the presentation of content, but are instructions on how to learn. This is normally simpler and easier than the subject matter or content. It uses a different channel or media to avoid mixing it with the subject matter. The rate of learning increases because learners are less likely to lose time or become frustrated by basing performance on incorrect facts or poorly understood concepts.
- **6. Elicit performance.** Practice by letting the learner do something with the newly acquired behavior, skills, or knowledge
- **7. Provide feedback**. Show correctness of the learner's response, analyze learner's behavior. This can be a test, quiz, or verbal comments. The <u>feedback</u> needs to be specific, not, "you are doing a good job" Tell them "why" they are doing a good job or provide specific guidance.
- **8. Assess performance.** Test to determine if the lesson has been learned. Can also give general progress information
- **9. Enhance retention and transfer.** Inform the learner about similar problem situations, provide additional practice, put the learner in a <u>transfer situation</u>, review the lesson.

## Bruner's Constructivist Theory

- Instruction must be concerned with the experiences and contexts that make the student willing and able to learn (Readiness).
- Instruction must be structured so that it can be easily grasped by the student (Spiral Organization).
- Instruction should be designed to facilitate extrapolation and/or fill in the gaps (Going beyond the information given).

ASCD

2011 ANNUAL CONFERENCE & EXHIBIT SHOW

Good interactive strategies enhance the cognitive, social, and emotional climate. Listed below are four activities that are based on constructivism methods.

### 1. Small Group Activities

In traditional classroom training, small group exercises involves the more conventional notion of cooperation, in that learners work in small groups on an assigned project or problem under the guidance of the trainer who monitors the groups, making sure the learners are staying on task and are coming up with the correct answers (if there is a right or a best answer). This is known as cooperative learning. Collaborative learning is a more radical departure. It involves learners working together in small groups to develop their own answer through interaction and reaching consensus, not necessarily a known answer. Monitoring the groups or correcting "wrong" impressions is not the role of the trainer since there is no authority on what the answer should be.

One small group method is "Numbered Heads Together" developed by Spencer Kagan. This method divides the learners in groups of three to six. Each group is assigned a team number and each group member is assigned a number. When the trainer poses a question, group members get together, examine the possibilities, and *construct* an answer. The trainer then picks a number by drawing a card or rolling a die. The number selected designates the spokesperson for each table group. A second number designates the table group that will respond first.

Group learning activities cause learners to integrate experiences, knowledge, and beliefs and at the same time, knowledge and beliefs are formed within each learner. While the group activity allows them to gain a new experience.

### 2. Learner Developed Instruction

Constructivist learning theory also places importance on the learner's point of view. Make a point of including participant requests in the design process. Although it requires extra work, the payback in engagement and learning is well worth the effort. This is because the learners bring some form of prior knowledge to presentations. These conceptions (and misconceptions) should become part of the design process for the experience you are trying to create. A mind map is a good method for helping a learner to present her current theories.

### 3. Metacognition and Reflection

Metacognition allows the learner to plan, set time lines, allocate resources. Also, metacognition also refers to the ability to reflect on one's own performance. Reflection allows the learners the opportunity to develop, assess, and organize their thoughts.

### 4. Other Activities

- Ask open-ended questions
- Identify situations where the learners' perceptions vary
- **Brainstorm** possible alternatives
- Have the learners:

# Carroll's Minimalist Theory

 "Minimize the extent to which instructional materials obstruct learning and focus the design on activities that support learner-

directed activity and accomplishment" (Kearsley 1994d).





# Carroll's Minimalist Theory

- Keep important information at the top of the page.
- Keep frames simple and be consistent in design of text, graphics and sound to limit cognitive overload.
- Keep pages short so learners don't have to scroll.

ASCD

## Vygotsky's Theory of Social Cognitive Development

"Social interaction plays a fundamental role in the development of cognition"



ASCD

2011 ANNUAL CONFERENCE & EXHIBIT SHOW

9

• Instruction is most efficient when students engage in activities within a supportive learning environment and when they receive appropriate guidance that is mediated by tools

## Vygotsky's Theory of Social Cognitive Development

- Simplify navigation
- Create effective menus
- Include indices and search capabilities
- Clearly identify content with appropriate headings and titles
- Place most important information on the top-left



## Critical Need for Efficient Learning

- Our own physiology inhibits learning
- Educators need to build learning environments to accommodate all students
- All technological interactions should augment traditional learning



ASCD

### 2011 ANNUAL CONFERENCE & EXHIBIT SHOW

One of the bottlenecks to efficient learning is our own physiology  $\tilde{n}$ - the way our brains are wired severely limits our capacity to learn.

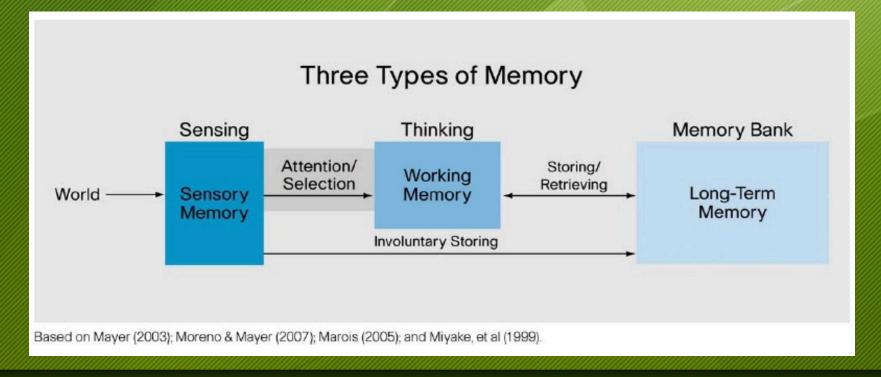
It is precisely this limitation that educators must overcome through informed design of learning environments, curricula, instruction, assessments, and resources.

As they design lessons, create learning environments, and interact with students, they are seeking augmentations that accommodate for these human limitations.

This is analogous to the design of machines (such as cars, tractors, elevators, robotic factories, can openers, stairs, etc.) used to accommodate for our severe physical strength and endurance limitations - only now we are augmenting intellectual capacity rather than physical capacity.

## Critical Need for Efficient Learning

- The Human Brain
- Multitasking



ASCD

#### 2011 ANNUAL CONFERENCE & EXHIBIT SHOW

Working memory: Working memory is where thinking gets done.

This represents one of the severe limitations of human thinking processes, for short-term memory is thought to be limited to approximately four objects that can be simultaneously stored in visual/spatial memory and approximately seven objects that can be simultaneously stored in verbal short-term memory.

Sensory memory: Experiencing any aspect of the world through the human senses causes involuntary storage of sensory memory traces in long-term memory as episodic knowledge.

It is only when the person pays attention to elements of sensory memory that those experiences get introduced into working memory.

Long-term memory: The short-term memory acts in parallel with the long-term memory.

Long-term memory in humans is estimated to store up to the equivalence of 50,000 times the text in the U.S. Library of Congress.

## Critical Need for Efficient Learning

- How do people learn?
  - ...By engaging student preconceptions
  - ...By deep understanding
  - ...By student-developed metacognitive strategies



A 2001 publication from the National Academy of Sciences, How People Learn

ASCD

### 2011 ANNUAL CONFERENCE & EXHIBIT SHOW

Student learning is greatly enhanced when each student's prior knowledge is made visible. Learning is

optimized when students can see where new concepts build on prior knowledge.

Students learn more when the concepts are personally meaningful to them. Students must also make sense of the topic through organization of those ideas into a framework of understanding. This framework requires to students learn topics in ways that are relevant and meaningful to them. Basically, we are talking about authentic learning in classrooms.

Metacognitive students approach problems by automatically trying to predict outcomes, explaining ideas to themselves, noting and learning from failures, and activating prior knowledge.

## Increase Learning Through:

- Presenting words and pictures, not words alone
- Presenting corresponding words and pictures simultaneously, not successively
- Excluding extraneous words, pictures, and sounds



Ginns, P. (2005). Meta-analysis of the modality effect. Learning and Instruction. Vol. 15, pp. 313-331. Institute for Teaching and Learning, University of Sydney, Australia.

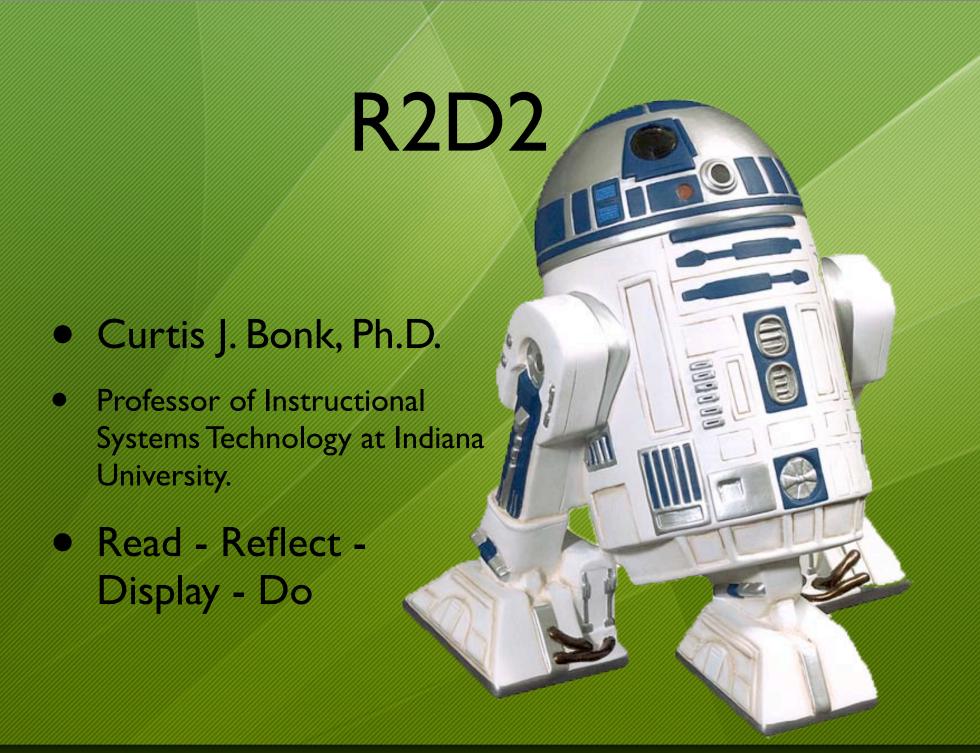


## Increase Learning Through:

- Animation and narration, not animation and on-screen text
- Single modality representation of information, not more than one modality
- Increasing direct manipulation of the learning materials (movement and pacing) to augment transfer of complex materials

Ginns, P. (2005). Meta-analysis of the modality effect. Learning and Instruction. Vol. 15, pp. 313-331. Institute for Teaching and Learning, University of Sydney, Australia.



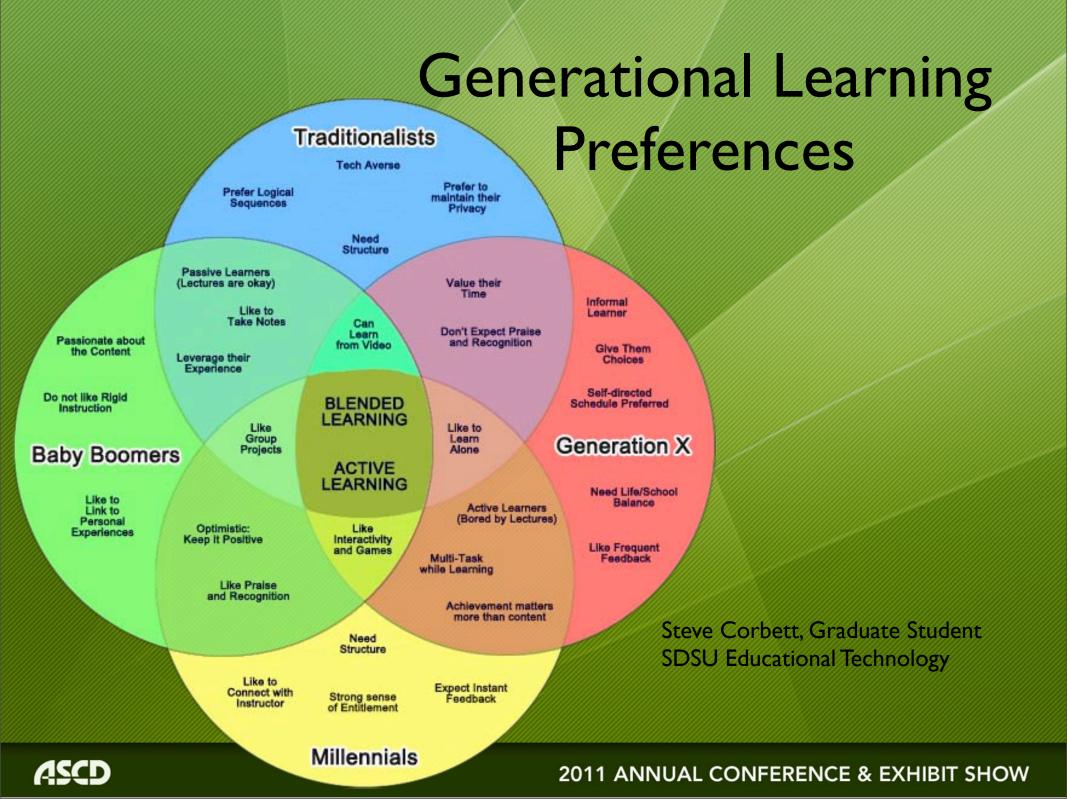


ASCD

### 2011 ANNUAL CONFERENCE & EXHIBIT SHOW

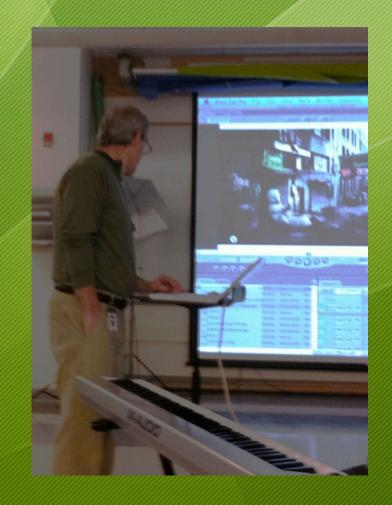
Read

- •The web contains countless resources for reading, researching, and listening. You can have your students discover and read online articles
- •Students also might listen to podcasts that relate to course content
- Reflect
  - •Students can blog or write about the concepts or ideas that they learned from their reading or listening activities
- Display
  - This involves pictures and videos
- Do
- •The internet provides many paths to try out course content
- create class projects
- produce their own podcasts
- •Without models, frameworks, and guidelines, instructors utilizing the web for learning will continue to be overwhelmed, frustrated, and perhaps feel that they are doomed.



## E-Learning

- Learning-centered environment
- Provides a wide variety
   of authentic assessment
   opportunities
- Grounded in existing knowledge





# Evidence-Based Practices in Online Learning

- A Meta-Analysis and Review of Online Learning Studies (2009)
- Instruction combining online and face-toface elements had a larger advantage relative to purely face-to-face instruction or purely online instruction.



# Evidence-Based Practices in Online Learning

"This new report reinforces that effective teachers need to incorporate digital content into everyday classes and consider opensource learning management systems, which have proven cost effective in school districts and colleges nationwide," said U.S. Secretary of Education Arne Duncan



## Learning Communities

Participants in online communities have a shared sense of belonging, trust, expectation of learning, and commitment to participate and to contribute to the community



Wilson, B. (2001). Sense of community as a valued outcome for electronic courses, cohorts, and programs. Retrieved April 26, 2004, from

http://carbon.cudenver.edu/~bwilson/SenseOfCommunity.htm







# Learning (Monitored) Community

- Students have the ability to post their work and thoughts
- All publicly displayed pages are filtered by the System Administrator
- System includes instruction, blog, journal space, display space, peer/teacher comment ability, and more....
- Let's take a quick tour

ASCD





## Learning Community

- A Variety of Activities
  - Post Original Works
    - Pictures / Sound
    - Videos / Animation
    - Writings
  - Post Comments



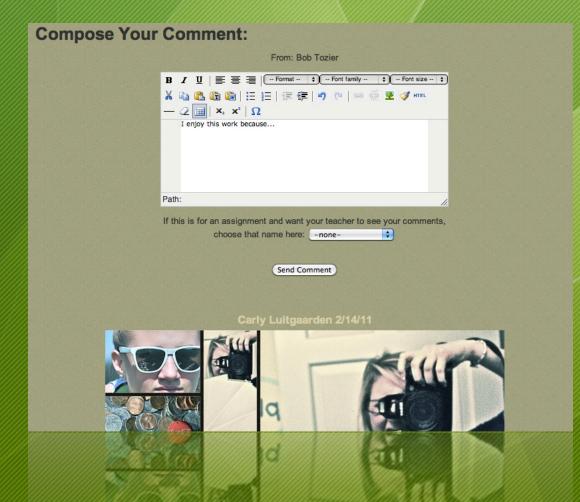




ASCD



ASCD



Compose Your Comment



www.YoSoyArtista.net

### Thanks for posting your comment.

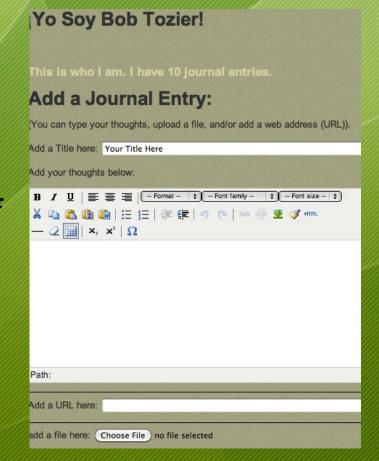
We'll take a quick look at it, and once that happens you will get an email confirming that it is on display.

## Moderation



## Journals

- Allow students the ability to:
  - Develop original ideas
  - Write a critical analysis of formal / expressive features of a work.
- Can be sent to a teacher as an assignment
- Can be part of a portfolio







Journals done electronically allow students to work at their own pace. Strong writers can have their entries publicly displayed.



### Self-Reflection

- Allow students the ability to reflect upon:
  - Craftsmanship; the effective use of media tools, software, and work process
  - Design and composition; the effective arrangement of visual and sound elements
  - Original expression; unique, personal development of a theme or vision
- Can be sent to a teacher as an assignment





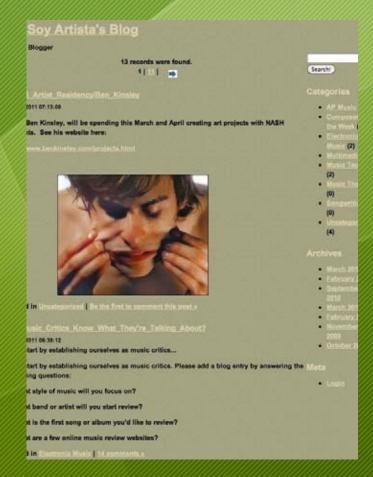


Electronic reflections allow students the chance to verbally tell their strengths and weaknesses. Teachers have the ability to comment to the student through the reflection.



## Blog

- At ¡Yo Soy! Blogs are moderated
- Blogs are:
  - Highly motivating to students, especially those who otherwise might not become participants in classrooms
  - Excellent opportunities for students to read and write.
  - Effective forums for collaboration and discussion.
  - Powerful tools to enable scaffolded learning or mentoring to occur





## WIKI

- At ¡Yo Soy! The WIKI is moderated
- WIKI's:
  - Foster richer communication than synchronous communication (Mabrito, 2006 cited in Orech, 2007)
  - Pool strengths of many
  - Online collaborative writing produces higher quality writing than face-to-face collaboration (Passig and Schwartz, 2007 cited in Orech, 2007)



www.YoSovArtista.net

#### Home

This is a wiki-style site which allows community members to write tips, thoughts, and FAQs creativly and edited collaboratively. The articles that have been created or modified on the site are listed by

#### Recently Created Pages

Tozier's Pag

Created: 2010-08-02 00:04:16

#### I Like Jazz

I like Jazz. Do you? Tell us about it. Created: 2010-08-01 22:01:07

#### Welcome

This is Bob's Welcome Page Created: 2010-07-07 09:57:09

All Recently Created Pages ..



## Favorites

• ¡Yo Soy! has the ability to create favorites

	Category	Format	Title   Notes
9	animation	animation	Birds. great use of the trace bitmap function. I love how it slowly evolves
<u></u>	Classical	audio	The Swan classical sudictive This is a beautiful performance!
6	Reck	auto	Lindey Pro.vd. Great example of how versitie GarageSand is.
愈	Photography	image	Stars. good use of the drawing tools in Photoshop.
9	Photography	lesage	Moon.
9	Photomortage	image	The Pinned Individual
1	Classical	audio	toccetta and fuge in d minor great variation
ē	animation	animation	Rox animation.
			Photoshop Montage 2



# Mentors

- Teachers and professionals can provide constructive feedback to students
- These comments are private and do not show up in a portfolio

This is who I am. I have 10 mentor comments.

Mentor Comments.

Mentor Comment by: Beth Leckey artwork title: Zelznick's Animation dated: March 24, 2009

Mentor Comment by: Krista Tozier artwork title: 2nd Animation dated: March 24, 2009

Mentor Comment by: Thomas Mooney artwork title: Crossfirel dated: March 26, 2009

Mentor Comment by: Thomas Mooney artwork title: Crossfirel dated: March 26, 2009

Mentor Comment by: Krista Tozier artwork title: Suite for Guitar dated: March 26, 2009

Mentor Comment by: Beth Leckey artwork title: Weather Channel Jazz dated: April 2, 2009



## Portfolio

- The site automatically creates a portfolio for each member that includes:
  - Uploads (pictures, sound, video, animation)
  - Writings
  - Journals
  - Favorites





### 4C's

- Certain skills and competencies, such as critical thinking, communication, collaboration, and creativity, are vital for student success in life
- Teachers can survey their students

#### The 4C's... We are focused on providing a quality educational experience to our students as you prepare for the next step in your lives (e.g., college, technical school, work force, or military). We believe that certain skills and competencies, such as critical thinking, communication, collaboration, and creativity, are vital for your continued success. Please take a few minutes to thoughtfully respond to this voluntary survey. Your anonymous feedback will be used to help us continue to improve our The following scale will be used for each statement: 5 - Strongly Agree 4 - Agree 3 - Neutral 2 - Disagree 1 - Strongly Disagree The Survey 1. I see connections between seemingly unrelated ideas. O1- Strongly Disagree O2- Disagree O3- Neutral O4- Agree O5-2. I am able to independently produce results that are fresh, unique, original, and O1- Strongly Disagree O2- Disagree O3- Neutral O4- Agree O5-Strongly Agree 3. I am intrigued by and tremendously interested in a specific subject area and continuously explore aspects of that area independently (e.g., art or science). O1- Strongly Disagree O2- Disagree O3- Neutral O4- Agree O5-



2011 ANNUAL CONFERENCE & EXHIBIT SHOW

Strongly Agree

# 4C's

### Data is automatically compiled

#### Creativity

#### Think Creatively

- . Use a wide range of idea creation techniques (such as brainstorming)
- · Create new and worthwhile ideas (both incremental and radical concepts)
- · Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts

Ratings	1	2	3	4	5
Number Responding	126	501	988	1694	780

Total number of response: 106 across 39 questions

Average: 3.57233
Total % of 4: 41.4282 %
Total % of 5: 19.0756 %
Total % of 4 & 5: 60.5038 %



# 4C's

### Data is automatically compiled

#### Classroom

#### Opportunities for 21st Century Skills

- 1. Core Subjects and 21st Century Themes
- 2. Learning and Innovation Skills
  - Creativity and Innovation
  - Critical Thinking and Problem Solving
  - Communication and Collaboration
- 3. Information, Media and Technology Skills
  - Information Literacy
  - Media Literacy
  - ICT Literacy
- 4. Life and Career Skills

Ratings	1	2	3	4	5
Number Responding	158	403	633	260	117

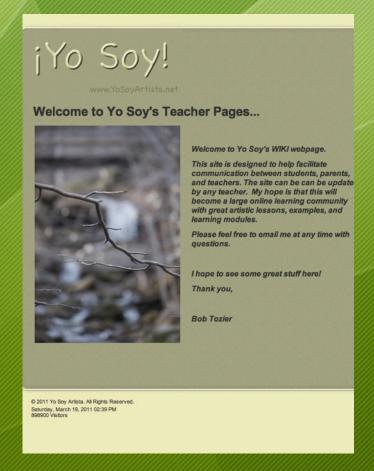
Total number of response: 106 across 27 questions

Average: 3.48393
Total % of 4: 16.55 %
Total % of 5: 7.44749 %
Total % of 4 & 5: 23.9975 %

ASCD

# Teacher Section

- ¡Yo Soy! can provide easy, content-managed pages for teachers
- Teachers can build pages without knowing how to code HTML





# Visual Art

- ¡Yo Soy! has complete online programs and materials in:
  - Multimedia Arts
  - **Photography**

#### **Computer Multimedia Arts**

In this course the students design and create original media rich In this course the students design and create original media rich web sites and computer interactive multimedia presentations that include animation, digital video, photography, graphics, sound and MIDI music. Students will learn to use digital cameras, scan and edit photographs. They will shoot and edit digital video. Students create animation and dynamic web content. Students learn sound recording, sound editing, and design and compose MIDI music. Photoshop

In the independent final project, students are encouraged to work to their interests and strengths, emphasizing a particular subject or artistic discipline. Projects have included digital art or music portfolios, web site development, online exhibits, learning games, multimedia stage performances, and interactive presentations on a variety of topics.

The course emphasizes conception and planning, solving design challenges, personal artistic expression and communication through new media technology. The course provides a foundation for careers in the growing field of web and multimedia design. The course is taught by art and music faculty. More course information and student work is online at <a href="http://www.yosoyartista.net/na/academics/art/multimedia">http://www.yosoyartista.net/na/academics/art/multimedia</a>.

Here are some of our goals:

- We will conceive, plan and create original multimedia artworks that express an idea, feeling or point of view, individually or as a member of a creative team. We will use new media and traditional media in a craftsman.
- like way that explores the boundaries of the media.

  We will shape the elements of sight and sound; time, space, color, light and texture, timbre, pitch and volume to express
- our ideas and to create interest, memorability, and beauty.

  We will view and listen to a wide array of work by artists, composers, filmmakers and other media artists, including
- student work, to analyze, critique and understand the work and the context in which it was made.



ASCD



# Music Ed

- ¡Yo Soy! has complete online programs and materials in:
  - Music Theory/AP Music
  - Ear Training/Skill Builders
- Each assignment is automatically graded



ASCD

# Tweet

- All successfully posted original works are "Tweeted"
- @Yosoyartista





# Texting

- ¡Yo Soy Artista! has the ability to send text messages to you
- All successfully uploaded original works are texted





# Bobby-O

- Do you remember Drop.io?
- Bobby-O is a "simple" version of that
- Teachers can simply upload files to share with the community





# Mobile

- ¡Yo Soy Artista! is also built for:
  - iPad
  - iPhone
  - iPod







ASCD

# Making the Difference:

Creating a Blended Setting to Educate Every Student

Bob Tozier, Pittsburgh, PA 724.312.5313 @btozier (Twitter) bob@tozier.net



