

## REAL Electronic Portfolios

Reflection,  
Engagement, and  
Assessment for  
Learning

## Balancing “Portfolio as Test” with “Portfolio as Story”

Dr. Helen Barrett

## Legacy from the Portfolio Literature

- Much to learn from the literature on paper-based portfolios
- As adult learners, we have much to learn from how children approach portfolios

“Everything I know about portfolios was confirmed working with a kindergartener”

## The Power of Portfolios

*what children can teach us  
about learning and assessment*

Author: Elizabeth Hebert  
Publisher: Jossey-Bass

Picture courtesy of Amazon.com.



## The Power of Portfolios

Author:  
Dr.  
Elizabeth  
Hebert,  
Principal  
Crow Island  
School,  
Winnetka,  
Illinois

Picture taken by  
Helen Barrett at  
AERA, Seattle,  
April, 2001



## From the Preface (1)

“Portfolios have been with us for a very long time. Those of us who grew up in the 1950s or earlier recognize portfolios as reincarnations of the **large memory boxes** or drawers where our parents collected starred spelling tests, lacy valentines, science fair posters, early attempts at poetry, and (of course) the obligatory set of plaster hands. Each item was selected by our parents because it represented our acquisition of a new skill or our feelings of accomplishment. Perhaps an entry was accompanied by a special notation of praise from a teacher or maybe it was placed in the box just because we did it.”



## From the Preface (2)

"We formed part of our identity from the contents of these memory boxes. We recognized each piece and its **association with a particular time or experience**. We shared these collections with grandparents to reinforce feelings of pride and we reexamined them on rainy days when friends were unavailable for play. **Reflecting on the collection** allowed us to attribute importance to these artifacts, and by extension to ourselves, as they gave witness to **the story** of our early school experiences."



## From the Preface (3)

"Our parents couldn't possibly envision that these memory boxes would be the inspiration for an innovative way of thinking about children's learning. These collections, lovingly stored away on our behalf, are the genuine exemplar for documenting children's learning over time. But now these memory boxes have a different meaning. It's not purely private or personal, although **the personal is what gives power to what they can mean.**"

## Let's get personal... Think for a minute about:

Something about your **COLLECTIONS**:

Suggested topics:

- If you are a parent, what you saved for your children
- What your parents saved for you
- What you collect...
- Why you collect...

## Some issues to consider

- What do your collections say about what you value?
- Is there a difference between what you purposefully save and what you can't throw away?
- How can we use our personal collections experiences to help learners as they develop their portfolios?

*The power of portfolios [to support deep learning] is personal.*

## What is a Portfolio in Education?

A portfolio is a purposeful collection of student work that exhibits the student's efforts, progress and achievements in one or more areas *[over time]*.

(Northwest Evaluation Association, 1990)

## What is a Portfolio in Education? (2)

The collection must include:

- student participation in selecting contents
- the criteria for selection
- the criteria for judging merit
- evidence of student self-reflection

(Northwest Evaluation Association, 1990)

## NLII e-Portfolio Definition

- a collection of authentic and diverse evidence,
- drawn from a larger archive representing what a person or organization has learned over time
- on which the person or organization has reflected, and
- designed for presentation to one or more audiences for a particular rhetorical purpose.

## "The Blind Men and the Elephant"

Thanks to Alan Levine



## "The Blind Men and the Elephant"

- Eskimos having 49 different words for "snow"
- Those who don't live in that environment tend to see it all as the same cold white stuff
- Same goes with "portfolio"

## Metaphors!

- Mirror, Map, Sonnet
- C.V. or Multimedia Resume
- Test
- Story
- <http://electronicportfolios.org/metaphors.html>

## Purpose & Goals for the portfolio (Determine Content)

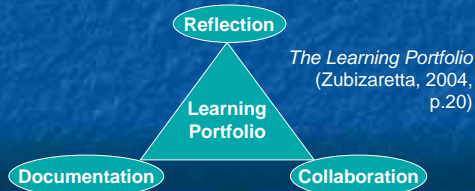
- Multiple purposes:
  - Learning/Process
  - Assessment
  - Marketing/Showcase

## Think about the differences between:

- Learning Portfolio *and* Portfolio Learning
- Assessment Portfolio *and* Portfolio Assessment
- Portfolio = **Concept, Product, and Process**

## Learning Portfolios

- *"know thyself" = a lifetime of investigation*
- *self-knowledge as outcome of learning*



## Learning Portfolios

- Support reflection which is central to learning
- **Reflections**
  - The Heart and Soul of the Portfolio
- An electronic portfolio without reflection is just a
  - Digital scrapbook
  - Fancy electronic resume
  - Multimedia Presentation
  - Personal web site

## Showcase Portfolios

- Marketing
- Employment
- Tell your story
- A primary motivator for many portfolio developers

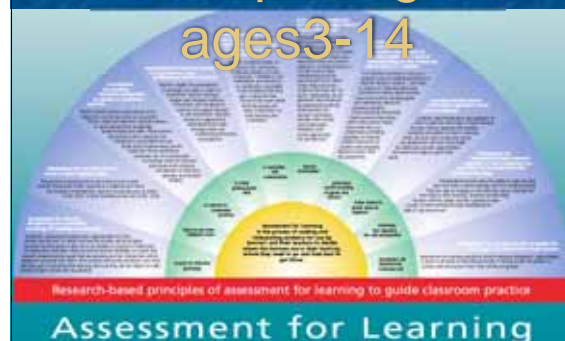
## Assessment Portfolios

- A major movement in Teacher Education in U.S.
  - A major new commercial market
  - A primary motivator for organizations
- More later!*

A few thoughts about  
**Assessment -- What Type?**

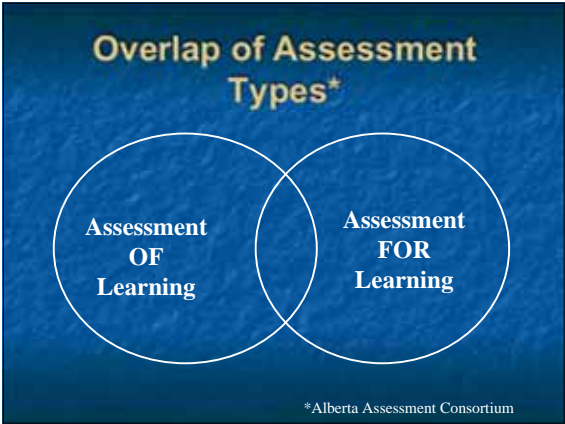
- Assessment OF Learning? or
- Assessment FOR Learning?

[www.qca.org.uk](http://www.qca.org.uk)  
ages3-14



## Principles of Assessment FOR Learning

- **Definition:**  
Assessment for Learning is the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go and how best to get there.

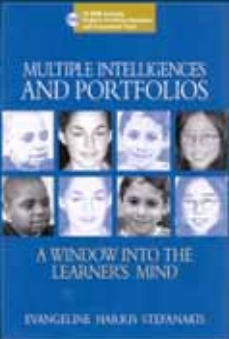


## Portfolios used for Assessment OF Learning

- Purpose of portfolio prescribed by institution
- Artifacts mandated by institution to determine outcomes of instruction
- Portfolio usually developed at the end of a class, term or program - time limited
- Portfolio and/or artifacts usually "scored" based on a rubric and quantitative data is collected for external audiences
- Portfolio is usually structured around a set of outcomes, goals or standards
- Sometimes used to make high stakes decisions
- Summative - what has been learned to date? (Past to present)
- Requires Extrinsic motivation
- Audience: external - little choice

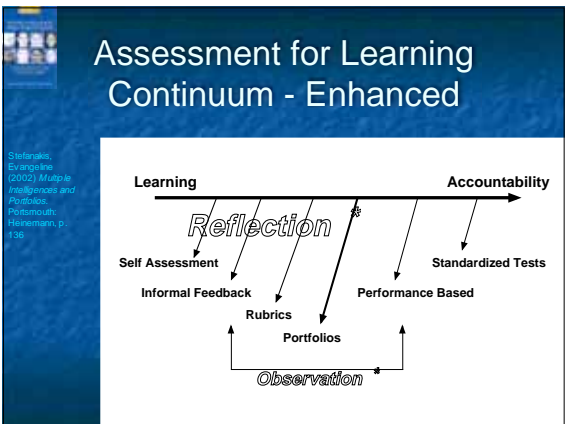
## Portfolios that support Assessment FOR Learning

- Purpose of portfolio agreed upon with learner
- Artifacts selected by learner to tell the story of their learning
- Portfolio maintained on an ongoing basis throughout the class, term or program - time flexible
- Portfolio and artifacts reviewed with learner and used to provide feedback to improve learning
- Portfolio organization is determined by learner or negotiated with mentor/advisor/teacher
- Rarely used for high stakes decisions
- Formative - what are the learning needs in the future? (Present to future)
- Fosters Intrinsic motivation - engages the learner
- Audience: learner, family, friends - learner can choose



### A Resource on K-12 Portfolios

- By Evangeline Harris Stefanakis
- Published by Heinemann
- Includes a CD-ROM with examples of student portfolios



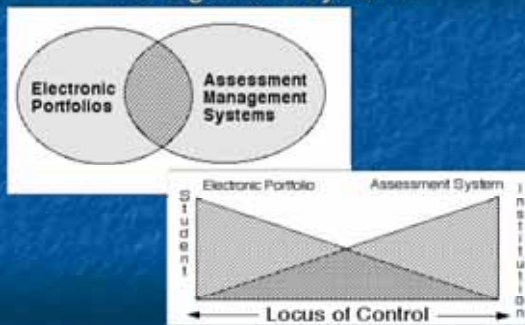
## Which approach should you take?

- Are you looking for an **electronic portfolio...**
- Or an **assessment management system?**
- What's the difference?  
Along a Continuum

## Electronic Portfolio or Assessment Management System?

Electronic Portfolio	Assessment Management System
Multiple purposes: Learning, Assessment, Employment	Single purpose: Formative and Summative Assessment
Data structure varies with tools used to create the portfolio; common data formats (converted to HTML, PDF)	Data structure most often uses a relational database to record, report data
Primary type of data: qualitative	Primary type of data: qualitative and quantitative
Data storage in multiple options: CD-ROM, videotape, DVD, WWW server, LAN	Data storage primarily on LAN or on secure WWW server
Visual design and hyperlinks often under control of portfolio developer	Visual design and hyperlinks most often controlled by database structure
<b>Learner</b> choice of artifacts	<b>Institutional</b> choice of artifacts
Learner-Centered	Institution-Centered

## Electronic Portfolio or Assessment Management System?



## What is your portfolio?

- A standardized **checklist** of skills? (Positivist)
- OR
- A reflective **story** of deep learning? (Constructivist)

## Tension between two approaches

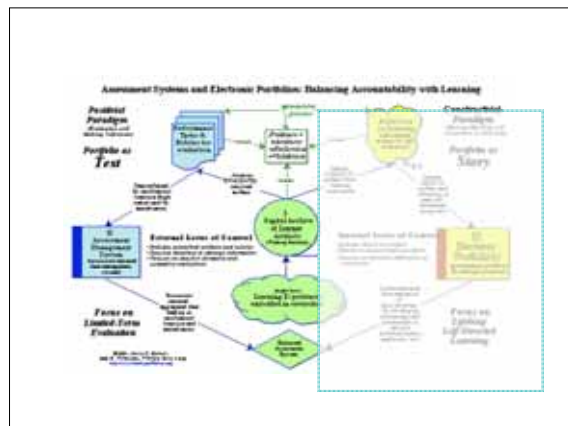
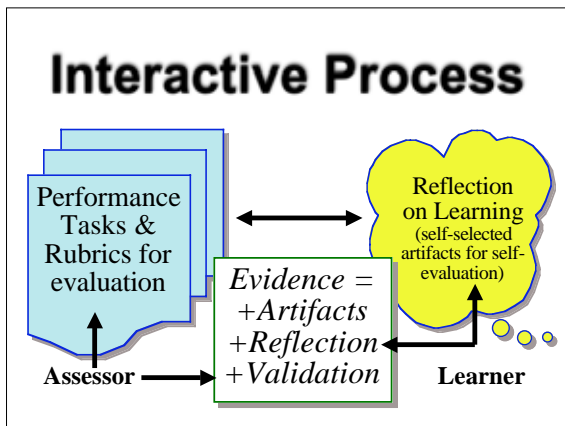
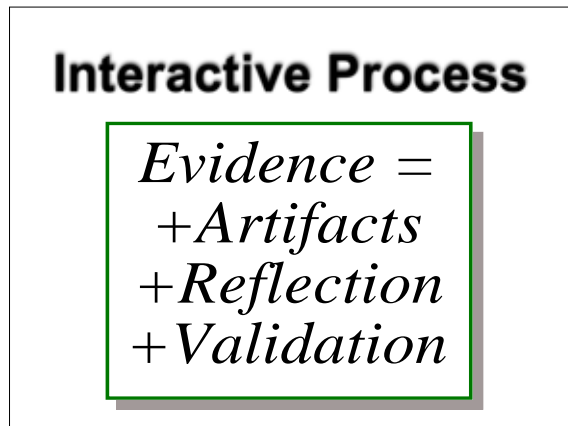
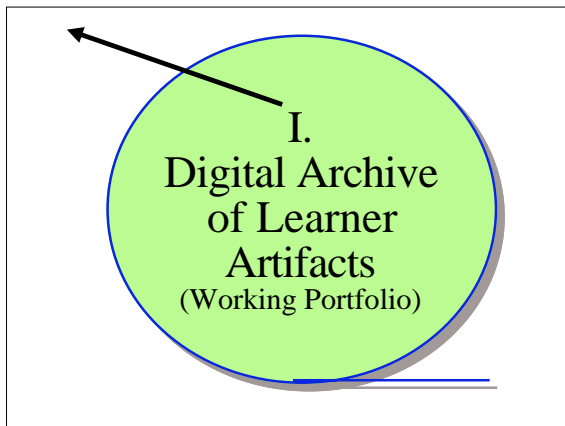
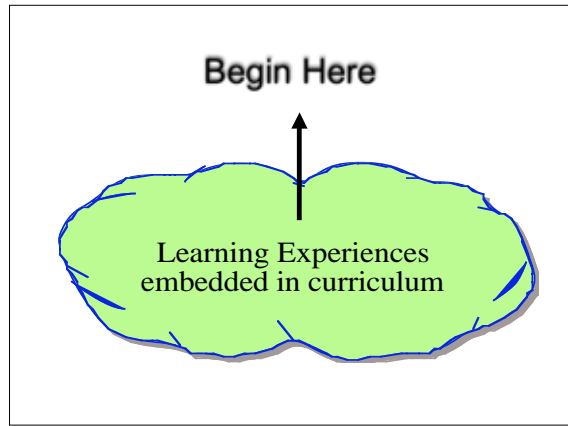
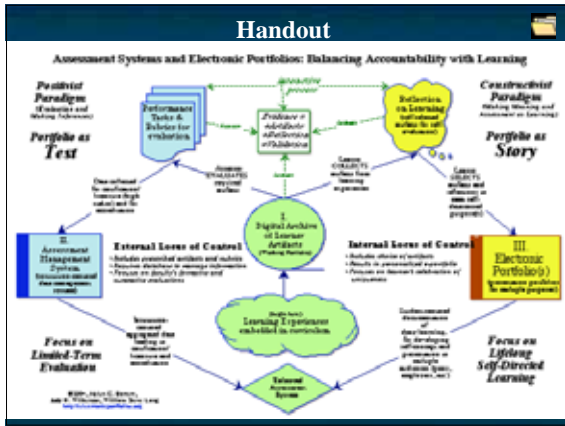
- “The two paradigms produce portfolio activities that are entirely different.”
- “The positivist approach puts a premium on the selection of items that reflect **outside standards and interests.**”
- “The constructivist approach puts a premium on the selection of items that reflect learning **from the student's perspective.**”

F. Leon Paulson & Pearl Paulson (1994)  
 “Assessing Portfolios Using the Constructivist Paradigm”  
 in Fogarty, R. (ed.) (1996) *Student Portfolios*.  
 Palatine: IRI Skylight Training & Publishing

## How can we address both types of portfolios?

Use three different systems that are digitally linked:

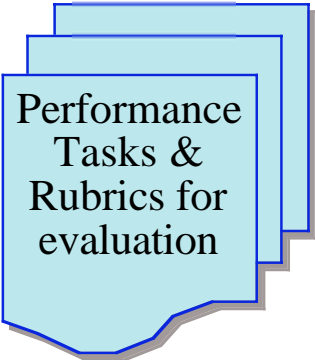
- I. A digital **archive** of a learner's work
- II. An institution-centered **database** to collect faculty-generated assessment data based on tasks and rubrics
- III. A student-centered **electronic portfolio**



**Positivist  
Paradigm**  
*(Evaluation and  
Making Inferences)*

**Portfolio as Test**

**Assessor  
EVALUATES  
required  
artifacts**



Performance  
Tasks &  
Rubrics for  
evaluation

Data collected for  
certification/  
licensure  
(high stakes)  
and for  
accreditation



**II.**  
**Assessment  
Management  
System**  
(institution-centered  
data management  
system)

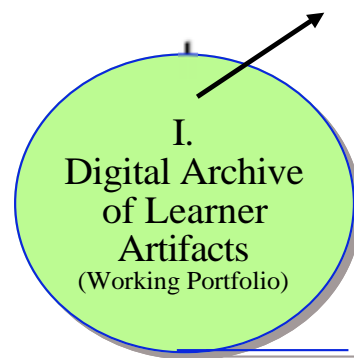
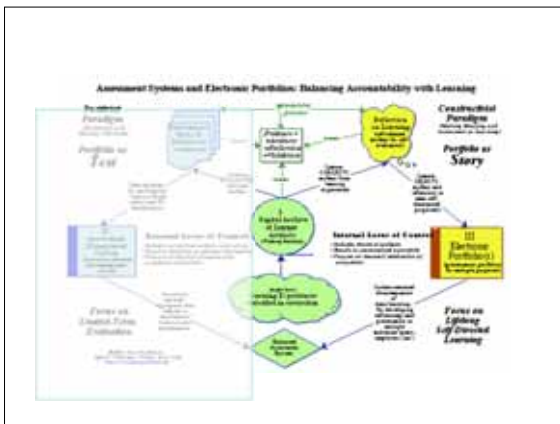
**Resulting in...**

**Institution-centered  
aggregated data  
leading to  
certification/licensure  
and accreditation**

# Focus on Limited-Term Evaluation

## External Locus of Control

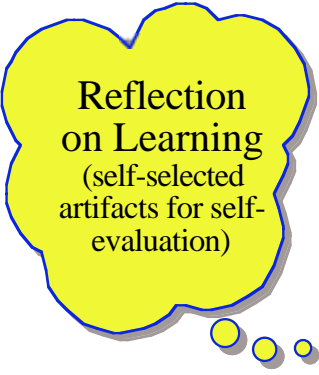
- Includes prescribed artifacts and rubrics
- Requires database to manage information
- Focuses on faculty's formative and summative evaluations



**Constructivist  
Paradigm**  
(Making Meaning and  
Assessment as Learning)

**Portfolio as Story**

**Learner  
COLLECTS  
artifacts from  
learning  
experiences**



Reflection  
on Learning  
(self-selected  
artifacts for self-  
evaluation)

**Learner SELECTS  
artifacts and  
reflections to meet  
self-determined  
purpose(s)**



**III.  
Electronic  
Portfolio(s)**  
(presentation portfolios  
for multiple purposes)

**Resulting in...**  
**Student-centered  
documentation of  
deep learning,**  
for developing self-concept and  
presentation to multiple  
audiences (peers, employers, etc.)

***Focus on  
Lifelong  
Self-Directed  
Learning***

**Internal Locus of  
Control**

- ***Includes choice of artifacts***
- ***Results in personalized  
e-portfolio***
- ***Focuses on learner's  
celebration of uniqueness***

Both approaches result in a:



# Theory

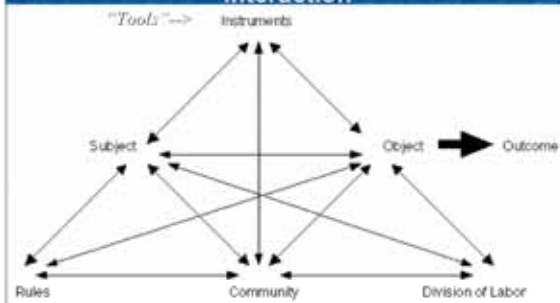
A tale of two paper portfolios

- High School graduates in Washington state (and Utah, too!)
- High school freshman in NY  
(Jim Mahoney, *Power and Portfolios* published by Heinemann)

What's the difference between those two stories?

- What are the variables that produce these extremes in attitudes toward ownership of portfolios?

**Activity Theory**  
Implications for human-computer interaction



**Cautions about Portfolio Use**

(Lucas, 1992)

1. The weakening of effect through careless imitation
2. The failure of research to validate the pedagogy
3. The co-option by large-scale external testing programs

(Lucas, Catharine. 1992. Introduction: Writing Portfolios - Changes and Challenges. *Portfolios in the Writing Classroom: An Introduction*, ed. Kathleen Blake Yancey. Urbana, Illinois: NCTE: 1-11)

## Lee Shulman's 5 dangers of portfolios

1. "lamination"
2. "heavy lifting"
3. "trivialization"
4. "perversion"
5. "misrepresentation"

Shulman, Lee (1998).  
Teacher Portfolios: A  
Theoretical Account.  
In N. Lyons (ed.) *With  
Portfolios in Hand*, (pp.  
23-37) New York:  
Teachers College Press.

## Lee Shulman's 5 dangers of portfolios

1. "lamination"  
- a portfolio becomes a mere exhibition, a self-advertisement, to show off

Shulman, Lee (1998).  
Teacher Portfolios: A  
Theoretical Account.  
In N. Lyons (ed.) *With  
Portfolios in Hand*, (pp.  
23-37) New York:  
Teachers College Press.

## Lee Shulman's 5 dangers of portfolios

2. "heavy lifting" - a portfolio done well is hard work. Is it worth the extra effort?

Shulman, Lee (1998).  
Teacher Portfolios: A  
Theoretical Account.  
In N. Lyons (ed.) *With  
Portfolios in Hand*, (pp.  
23-37) New York:  
Teachers College Press.

## Lee Shulman's 5 dangers of portfolios

3. "trivialization" - documenting stuff that isn't worth reflecting upon

Shulman, Lee (1998).  
Teacher Portfolios: A  
Theoretical Account.  
In N. Lyons (ed.) *With  
Portfolios in Hand*, (pp.  
23-37) New York:  
Teachers College Press.

## Lee Shulman's 5 dangers of portfolios

4. "perversion" - when used as a form of high stakes assessment "why will portfolios be more resistant to perversion than all other forms of assessment have been?"

Shulman, Lee (1998).  
Teacher Portfolios: A  
Theoretical Account.  
In N. Lyons (ed.) *With  
Portfolios in Hand*, (pp.  
23-37) New York:  
Teachers College Press.

## Lee Shulman's 5 dangers of portfolios

"...And if one of the requirements ... is that you develop a sufficiently objective scoring system [for portfolios] so you can fairly compare people with one another, will your scoring system end up objectifying what's in the portfolio to the point where the portfolio will be nothing but a very, very cumbersome multiple choice test?" (p. 35)

Shulman, Lee (1998).  
Teacher Portfolios: A  
Theoretical Account.  
In N. Lyons (ed.) *With  
Portfolios in Hand*, (pp.  
23-37) New York:  
Teachers College Press.

## Lee Shulman's 5 dangers of portfolios

5. "misrepresentation"  
- does "best work"  
misrepresent  
"typical work" --  
not a true picture of  
competency

## Lee Shulman's 5 benefits of portfolios

- 1 document longer episodes of teaching and learning
- 2 encourage the reconnection between process and product.  
- very best teaching portfolios contain excerpts of student portfolios & highlight the results of teaching that lead to student learning.
- 3 institutionalize norms of collaboration, reflection, and discussion
- 4 a portable residency... introduces structure to the field experience
- 5 (most important) shifts the agency from an observer back to the teacher interns...

## Joanne Carney's Dilemmas of Electronic Portfolios

- 1 Multiple Purpose Dilemma
- 2 Personal Revelation Dilemma
- 3 Cognitive Overload Dilemma
- 4 Self-Expression Dilemma
- 5 Dead-End Dilemma
- 6 Data-Aggregation Dilemma

Carney, Joanne (in development) "Campfires Around Which We Tell Our Stories: Confronting the Dilemmas of Teacher Portfolios and New Technologies"

## Constructed Meaning

"The portfolio is a **laboratory** where students **construct meaning** from their accumulated experience."

(Paulson & Paulson, 1991, p.5)

## Portfolio tells a Story

"A portfolio tells a story.

It is the story of knowing. Knowing about things... Knowing oneself... Knowing an audience... Portfolios are students' own stories of what they know, why they believe they know it, and why others should be of the same opinion."

(Paulson & Paulson, 1991, p.2)

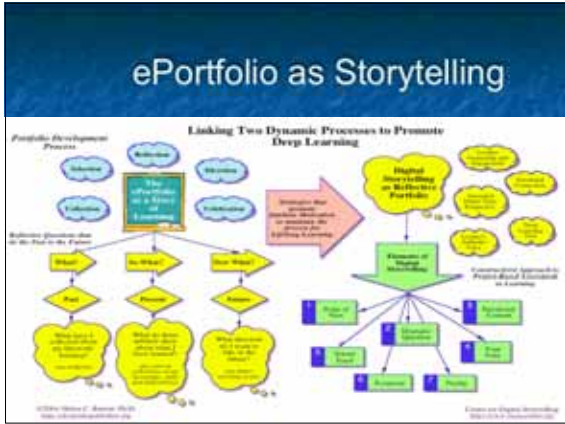
## Portfolios tell a Story

"A portfolio is opinion backed by fact... Students prove what they know with samples of their work."

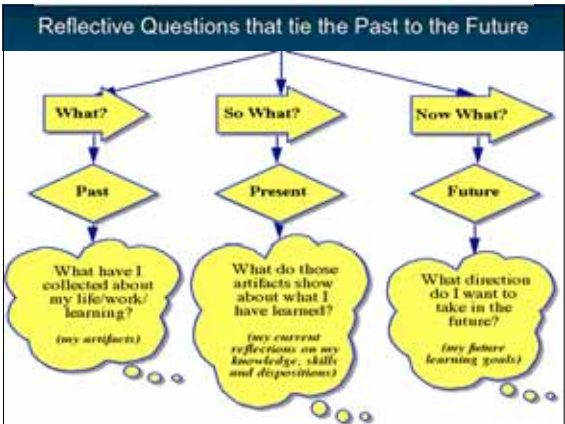
(Paulson & Paulson, 1991, p.2)

Linking Two Dynamic Processes to Promote Deep Learning

Portfolio Development Process  
Digital Storytelling



- Portfolio Processes
- Traditional + Technology
- Collecting
  - Archiving
  - Selecting
  - Linking/Thinking
  - Reflecting
  - Storytelling
  - Directing
  - Collaborating
  - Celebrating
  - Publishing



- Some concerns...
- Assessment for Learning
  - Portfolios for Learning
  - What about Motivation?

## Components of Portfolio Development

- **Content**
- **Purpose**
- **Process**

## Components of Portfolio Development

- **Content:**  
evidence=  
artifacts + reflections  
+ validation

## Components of Portfolio Development

- **Purpose:**  
the reason for developing the portfolio – includes audience
  - Learning & professional development - Process
  - Assessment (Of and for learning)
  - Showcase (Employment/Marketing)

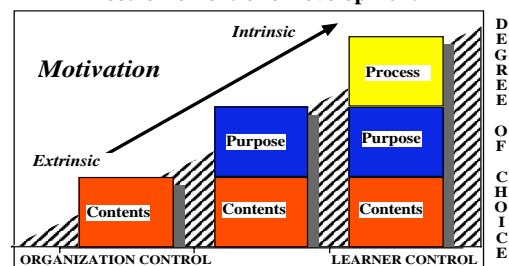
## Components of Portfolio Development

- **Process:**
  - tools used
  - sequence of activities
  - rules
  - evaluation criteria (rubrics)
  - collaboration/conversation

## Developmental Levels of Portfolio Implementation

- **Extrinsic Motivation**  
–institutional directed content, purpose & process – external locus of control
- **Mixed Motivation**  
–learner ownership over one or two of the components
- **Intrinsic Motivation**  
–learner ownership of content, purpose and process

## Learner Ownership and Control of Electronic Portfolio Development



Learner Control vs. Organizational Control  
Assumption:  
Greater Learner Control leads to more Intrinsic Motivation

## Linked to...



Strategies that promote Intrinsic Motivation to maintain the process for Lifelong Learning

### Digital Tools to Support Reflection:

- Online Portfolios
- Blogs & Wikis
- Digital Storytelling
- Games

## "Blog" #1 word of the year\*

- Merriam-Webster Inc announced its top 10 "words of the year" list, with the immensely popular "blog" taking the number one place.
- Compiles list each year by taking the most researched words on its various Web sites

*\* Internet Scout Report, December 3, 2004*

## Portfolios provide Encouragement for Reflection

... provides both the discipline and the freedom of structure, allowing one to see one's own work. (Sonnet)

... provides the opportunity to assess one's own strengths and weaknesses through examination of a collection of samples, as well as to get feedback on one's performance from others. (Mirror)

... the process of self assessment leads one to setting goals for future development and professional growth. (Map)

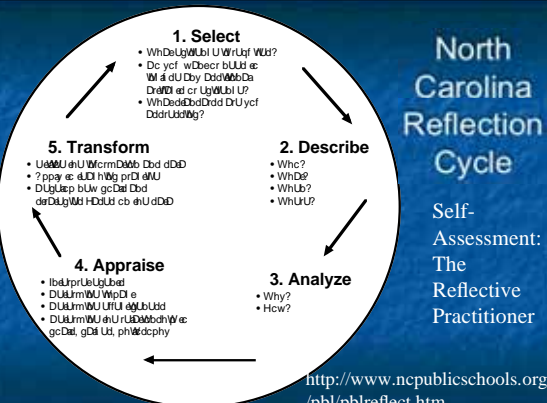
(Mary Diez, 1994)

## Helping Students to Reflect

- Provide models and examples
- Begin with forms or prompts
- Move to journals/blogs
- Be careful that reflection in portfolios doesn't become an exercise in filling in the blanks on a web-based form.

## North Carolina Reflection Cycle

Self-Assessment: The Reflective Practitioner



1. Select

- Why? What? When? Where? How?
- Do you? What? When? Where? How?
- What? When? Where? How?
- Why? What? When? Where? How?
- What? When? Where? How?

2. Describe

- Why?
- What?
- Where?
- When?
- How?

3. Analyze

- Why?
- How?

4. Appraise

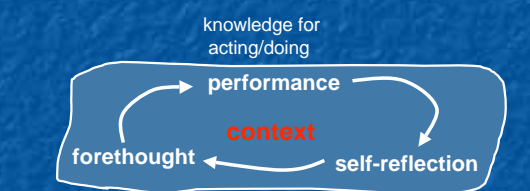
- What? When? Where? How?
- Why? What? When? Where? How?
- What? When? Where? How?
- Why? What? When? Where? How?

5. Transform

- What? When? Where? How?
- Why? What? When? Where? How?
- What? When? Where? How?
- Why? What? When? Where? How?

<http://www.ncpublicschools.org/pbl/pblreflect.htm>

## How might an e-portfolio support development of personal knowledge?



knowledge for acting/doing

performance

context

self-reflection

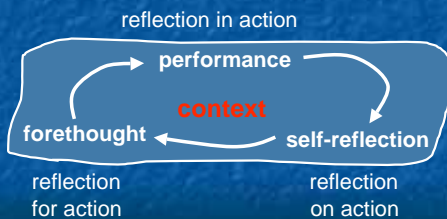
forethought

knowledge for planning actions and imagination

knowledge of self derived from doing

*Norman Jackson  
Higher Education Academy, U.K.*

### How might an e-portfolio support reflection and development of metacognition?

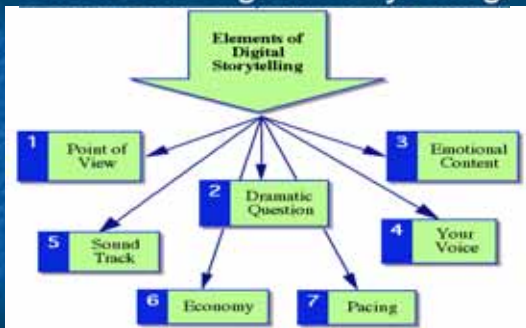


Norman Jackson  
Higher Education Academy, U.K.

### Digital Storytelling Process

- Learners create a 2-4 minute digital video clip
  - First person narrative
  - Told in their own voice
  - Illustrated by (mostly) still images
  - Music track to add emotional tone

### Center for Digital Storytelling



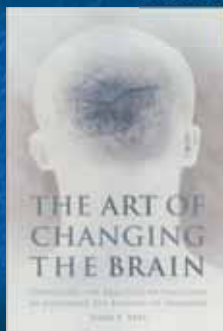
<http://www.storycenter.org>

### Why include Digital Storytelling in ePortfolios?

## Learner Motivation and Affect

## Brain Research on Emotion in Learning

### Resource on Biology of Learning



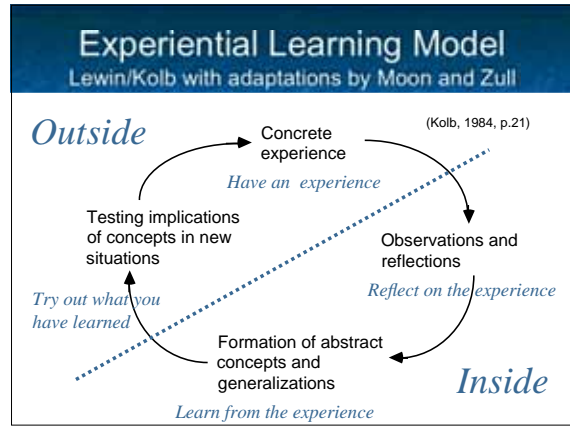
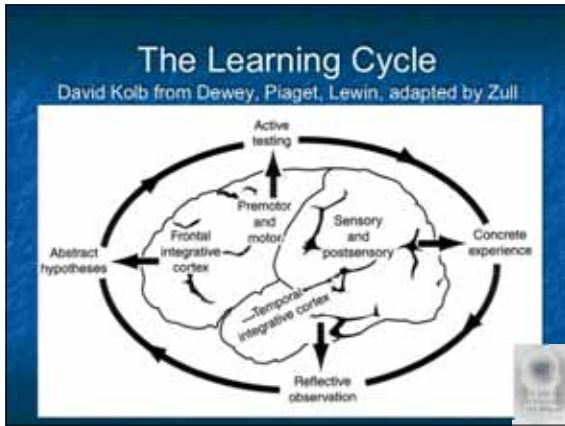
- Enriching the Practice of Teaching by Exploring the Biology of Learning
- James E. Zull
- Stylus Publishing Co.

### The Learning Cycle

David Kolb from Dewey, Piaget, Lewin

- **Deep Learning** (learning for real comprehension) comes from a sequence of
  - Experience
  - Reflection
  - Abstraction
  - Active testing
- Zull: the learning cycle arises naturally from the structure of the brain (p.19)





- ### Reflection and Emotion
- James Zull
- Even if we experience something that has happened to us before, it is hard to make meaning of it unless it engages our emotions. (p.166)
  - Reflection is a search for connections. (p. 167)
  - Sleep researchers postulate that dreams help us make connections... We discover what is important to us, because we dream about what matters most. (p.168)
  - For comprehension we need time. (p. 168)

- ### Reflection and Emotion
- James Zull
- "Even if we were able to decrease our emphasis on speed and information and increase the possibilities for reflection, we still would have to give our students the kind of experience that would produce dreams-- **experiences that engage their emotions.**" (p.168)
  - "...our experiences must matter in our lives if we are to learn from them." (p.168)
  - "...it suggests how seriously we have to take emotion if we want to foster deep learning." (p. 169)

- ### My own story
- "ON1 gOOd 1xamp1l A wOrPh 1000 Ph1OrAs"
  - Th1 Asu1 Of PAn1 aNd 11arNA1g - r1aCh1ng aNOPh1r PrANsARON aNd d10ASON pOAP A1 a 1ONg Qar11r, r1f10PA1g ON Ph1 mA1sPON1s A1 my 1A1
  - Play "OhO01s"
- 

- ### Storytelling as a Theory of Learning
- 
- Two educators from New Zealand - staff developer and health educator
  - Relates storytelling to literature on learning and reflection
  - Provides stages of storytelling related to reflection



## Links between Learning and Storytelling

Map of Learning (Moon, 1999)	Learning through Storytelling (McDrury & Alterio, 2003)
<ul style="list-style-type: none"> <li>■ Noticing</li> <li>■ Making sense</li> <li>■ Making meaning</li> <li>■ Working with meaning</li> <li>■ Transformative learning</li> </ul>	<ul style="list-style-type: none"> <li>■ Story finding</li> <li>■ Story telling</li> <li>■ Story expanding</li> <li>■ Story processing</li> <li>■ Story reconstructing</li> </ul>

McDrury, J., Alterio, M. (2003) *Learning through Storytelling in Higher Education*. London: Kogan-Page, p.47

### Storytelling = Narrative Inquiry

*Mattingly in Schön (1991)*

- Aristotle: narrative – natural framework for representing world of action
- Everyday sense-making role of storytelling
- Stories reveal the way ideas look in action
- Narrative provides explanation
- Motivation for telling stories: to wrest meaning from experiences

### Storytelling as Reflection (Schön, 1988)

“...for storytelling is the mode of description best suited to transformation in new situations of action.”

### Storytelling as Reflection

(Schön, 1988)

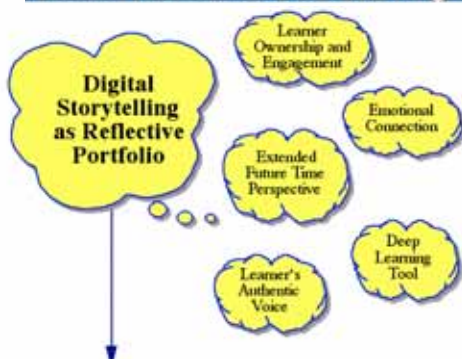
“Stories are products of reflection, but we do not usually hold onto them long enough to make them objects of reflection in their own right.”

### Storytelling as Reflection

(Schön, 1988)

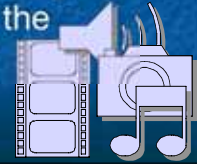
“When we get into the habit of recording our stories, we can look at them again, attending to the meanings we build into them and attending, as well, to our strategies of narrative description.”

## Constructivist Approach to Project-Based "Assessment-as-Learning"



## Learner Ownership and Engagement with Portfolio

- The tools should allow the learner to feel in control of the process, including the "look and feel" of the portfolio.



## Deep Learning

- involves reflection,
- is developmental,
- is integrative,
- is self-directive, and
- is lifelong

Cambridge (2004)

## Voice = Authenticity

- multimedia expands the "voice" in an electronic portfolio (both literally and rhetorically)
- personality of the author is evident
- gives the reflections a uniqueness
- gives the feeling that the writer is talking directly to the reader/viewer

## Digital Paper or Digital Story?

Digital paper = text and images only  
Digital story = tell your story in **your own voice**.

**Multimedia** = audio and video

## Graduate Student Examples

- ...Or you are a graduate student who is drawing you a picture
- Play "Oomph full OAO1"
- Play "a journey to the missing"



## What's Your Story?

Reasons Not Possible All are  
Audacious words All but most  
Likely small and simple

## Digital Story as Legacy

Not just for professional  
development  
Or skills-based programs

## Digital Storytelling Becomes a Lifelong, Life Wide Skill

- **Digital Family Stories**  
-from birth to end-of-life
- **Digital Family Stories**  
-help people reflect on life transitions
- **Digital Family Stories**  
-preserve multimedia memories as a legacy for future generations



## Recommendations!

Unsolicited e-mail messages

## From a Teacher Educator in Ohio

- This past quarter, I worked with my graduate students (all inservice teachers) on telling their "digital stories" of why they have stayed in teaching for so many years/or why they went into teaching, their thoughts on the future of education and their philosophy of teaching... Some of the stories were so passionate, I cried as I graded them. [In fact my whole hallway cried and laughed as we watched them.] Digital storytelling is a very powerful medium for expressing the art and passion of inservice teachers about their own teaching. It was one of the most fantastic experiences for my own "learning about my students" that I have had in recent years! We used Moviemaker and VideoStudio 8, one free and the other \$69, since we are doing all of this in an online environment and the teachers have to purchase their own software for the courses, the teachers loved it – and keep sending me ideas now of how they are going to use it in their own classrooms. Enjoy the digital storytelling – it is well worth the time!

## From a Teacher Educator in Florida

- Each of my students this semester produced two digital stories, one focusing on their philosophy of teaching, and the other dealing with their field experience, We used PhotoStory 3 because it was a free Microsoft Download. I was most impressed with their efforts and they have told me it was a most meaningful activity.

## Presentation online and stories are on my CD

- <http://electronicportfolios.org> and click **On-Line Publications**  
*"Electronic Portfolios as Digital Stories of Deep Learning"*
- <http://electronicportfolios.org> and click **Recent Conference Presentations**
- My CD has examples of digital stories as well as hands-on activities to learn the process on Mac and Windows XP

## Dr. Helen Barrett

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