

# ePortfolios: Digital Stories of Deep Learning in Higher Education

**Dr. Helen Barrett**  
The REFLECT Initiative and  
University of Alaska Anchorage

## 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

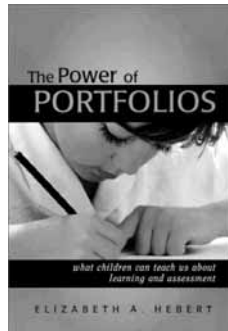
“Everything I know about portfolios was confirmed working with a kindergartener”

## 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)

Hebert, Elizabeth (2001) *The Power of Portfolios*. Jossey-Bass, p.ix

“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)

Hebert, Elizabeth (2001) *The Power of Portfolios*. Jossey-Bass, p.ix

“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)

Hebert, Elizabeth (2001) *The Power of Portfolios*. Jossey-Bass, p.ix-x

“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)

### Metaphors!

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

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

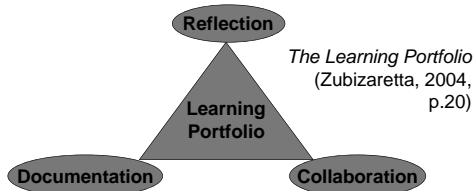
- Multiple purposes:
  - Learning/Process
  - Assessment
  - Marketing/Showcase

Think about the differences  
between:

- Learning Portfolio *and* Portfolio Learning
- Assessment Portfolio *and* Portfolio Assessment
- One is more **Product**, the other is more **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?**

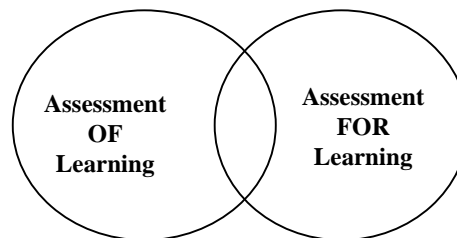
[www.qca.org.uk](http://www.qca.org.uk)  
**ages3-14**

Research-based principles of assessment for learning to guide classroom practice  
**Assessment for Learning**

**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.

**Overlap of Assessment  
Types\***



\*Alberta Assessment Consortium

**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

**Assessment for Learning Continuum - Enhanced**

Stefanakis, Evangeline (2002) *Multiple Intelligences and Portfolios*. Portsmouth, Heinemann, p. 136

**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?**

**Contrasting Paradigms of Portfolios**

- **Positivism**
- **Constructivism**

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

## 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**



## 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)



## Stories and Learning

James Zull

- Roger Shank: importance of stories in learning
- Recalling and creating stories are part of learning
- Stories engage all parts of the brain
- Learning is deepest when it engages the most parts of the brain
- Teachers and students should:
  - Tell stories
  - Create stories
  - Repeat stories

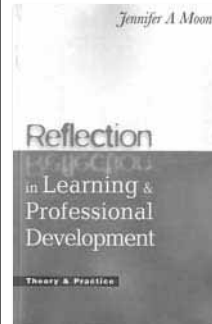


## My own story

- The issue of time and learning - reaching another transition and decision point in a long career, reflecting on the milestones in my life
- Play "choices"



## Jennifer Moon's Definition



- Reflection is a form of mental processing – like a form of thinking – that we use to fulfill a purpose or to achieve some anticipated outcome. It is applied to relatively complicated or unstructured ideas for which there is not an obvious solution and is largely based on the further processing of knowledge and understanding and possibly emotions that we already possess (based on Moon 1999)

## Moon on Reflection

- One of the defining characteristics of surface learning is that it does not involve reflection (p.123)
- Conditions for Reflection:
  - Time and space
  - Good facilitator
  - Curricular or institutional environment
  - Emotionally supportive environment



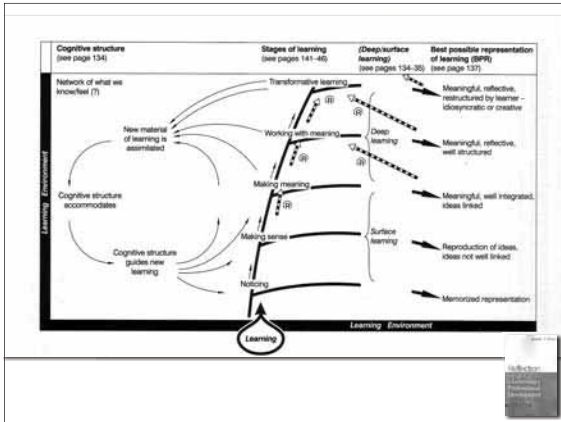
## Moon's Qualities of Tasks that Encourage Reflection

- Ill-structured, 'messy' or real-life situations
- Asking the 'right' kinds of questions – no clear-cut answers
- Setting challenges can promote reflection
- Tasks that challenge learners to integrate new learning into previous learning
- Tasks that demand the ordering of thoughts
- Tasks that require evaluation

pp.175-6







## 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

## Reflective Process and Storytelling

- First stage: inner discomfort or surprise – “something” makes the experience memorable
- Second stage: events examined in detail – stories are shared, dialogue is formed
- Third stage: relates to outcomes – decision to change or gain knowledge through reflection

McDrury, J., Alterio, M. (2003) *Learning through Storytelling in Higher Education*. London: Kogan-Page, p.110-1

## 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

## Story = Unpretentious Narrative

*Clandinin & Connelly in Schön (1991)*

- A fundamental method of personal growth
- Reflection: preparation for the future
- Deliberation: past considerations

## 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.”**

## A Graduate Student's Letter to a Former Teacher

- Maybe you are a graduate student reflecting on what is drawing you into teaching (while displaying your photo portfolio)
- Play “Coming Full Circle”
- Or you are a teacher reflecting about teaching all of your students
- Play “Hakuin”



## Constructed Meaning

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

*(Paulson & Paulson, 1991, p.5)*

## Portfolio tells a Story

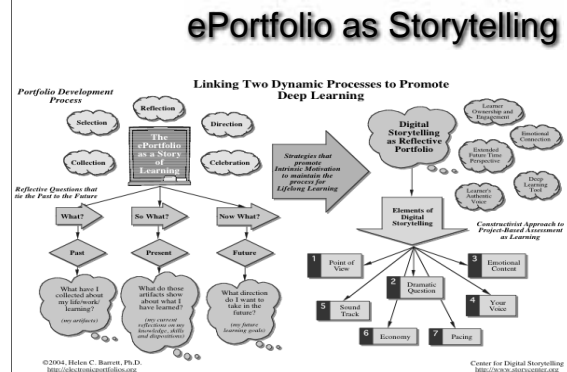
"A portfolio tells a story. It is the story of knowing. Knowing about things... Knowing oneself... Knowing an audience... Portfolios are students' own stories of what they know, why they believe they know it, and why others should be of the same opinion."  
(Paulson & Paulson, 1991, p.2)

## Portfolios tell a Story

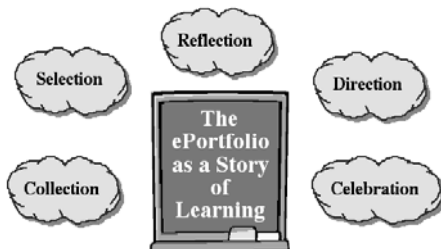
"A portfolio is opinion backed by fact... Students prove what they know with samples of their work."  
(Paulson & Paulson, 1991, p.2)

## Linking Two Dynamic Processes to Promote Deep Learning

### Portfolio Development Process Digital Storytelling



## Portfolio Development Process



## Portfolio Processes

### Traditional + Technology

- Collecting
- Archiving
- Selecting
- Linking/Thinking
- Reflecting
- Storytelling
- Directing
- Collaborating
- Celebrating
- Publishing

## Linked to...

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

Digital  
Storytelling

Blogs &  
Wikis

Games

## 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)**

## Components of Portfolio Development

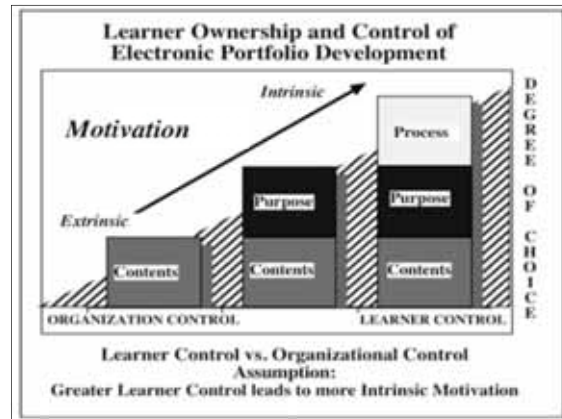
- **Purpose:**  
the reason for developing the  
portfolio – includes audience
- Learning & professional  
development - **Process**
- Assessment (Of and for learning)
- Showcase  
(Employment/Marketing)

## Components of Portfolio Development

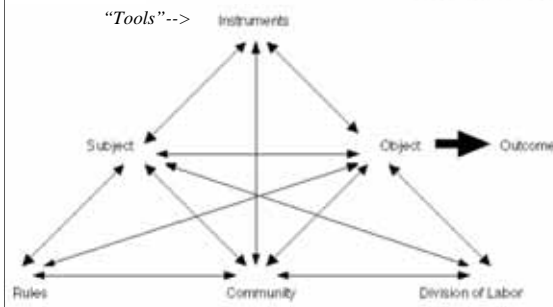
- **Process:**
- tools used
- sequence of activities
- rules
- evaluation criteria (rubrics)
- collaboration/conversation

## 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



## Activity Theory Implications for human-computer interaction



## Activity Theory

- **Subject** - the individual or group whose point of view is taken in the analysis of the activity
- **Object** (or objective) - the target of the activity
- **Instruments** - internal or external mediating artifacts which help to achieve the outcomes
- **Community** - one or more people who share the objective with the subject
- **Rules** - regulate actions and interactions within the activity system
- **Division of labor** - how tasks are divided horizontally between community members - any vertical division of power and status

## Digital Tools for Reflection

## Online Portfolios

## Electronic Portfolio Development

- Publishing environments:**  
Optical media (CD-R, DVD-R) or WWW
- Authoring environments:**  
Common Tools or Customized Systems

## Common Desktop Tools with hyperlinks

- Office - Word, Excel, Powerpoint
- Hypermedia authoring tools - HyperStudio
- Inspiration or Kidspiration (mind mapping)
- Adobe Acrobat
- HTML Editors - Front Page, Dreamweaver, Netscape/Mozilla Composer
- Multimedia Authoring  
Macromedia Director & Flash, Ezedia

My evaluation study of online software, services, or strategies

- <http://electronicportfolios.org/myportfolio/versions.html>
- Under On-line Publications
- To date, recreating my new portfolio using **17 different software packages, services, or strategies**

## Online Portfolio Tools

- Customized **Commercial Systems**
  - Higher Ed
    - General Hi-Ed: nuVentive's iWebfolio, ePortaro
    - Teacher Ed: LiveText, TaskStream, FolioTek, McGraw-Hill's FolioLive, Chalk & Wire
- Customized **ePortfolio Tools** developed **in-house**
  - Maricopa CC, PLP (Vermont Institutes), MNSCU/AveNet, Alverno DDP, Johns Hopkins, IUPUI Epsilen, UWWashington,,
- Open Source ePortfolio
  - OSPI (rSmart/UMN), others in development

## Online Portfolio Tool Characteristics

- **Custom-designed Electronic Portfolio Systems-** (A) system includes database to align artifacts to standards
- **Free Server Space**
- **Open Source Software**
- **Commercial Software** - primary market: Higher Ed, Teacher Ed, PK-12, Any
- **Content Management System (CMS)**
- **Web Log Software or Online Journals - "Blogs"**
- License agreement with - **individual or institution**
- Hosting - **Hosted:** resides on a centralized server; **Server:** software installed or data stored on own server space
- **Cost & Storage space** available

## Conclusions

- Too early to judge
- Scales applied to each system
  - **"Trade-offs" - "Balance"**
    - Creativity
    - Ease of Use
    - Cost/Storage & ROI
    - Features
    - Flexibility/Customization Allowed
    - Integration with Assessment System
    - Transfer & technology skill development

*"They each exhibit trade-offs between the flexibility inherent in an HTML-based tool with the relative ease-of-use but lack of creativity in a system built on a database."*

## Helping Students to Reflect

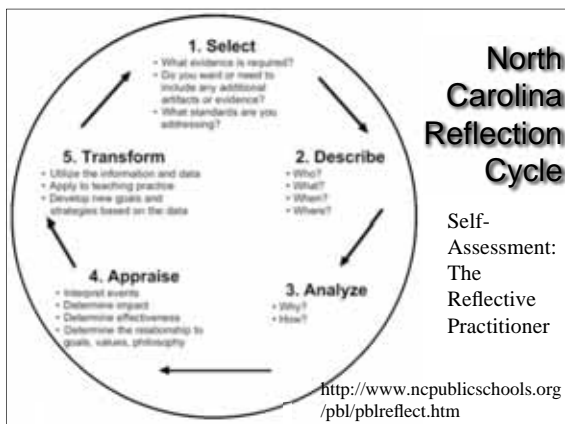
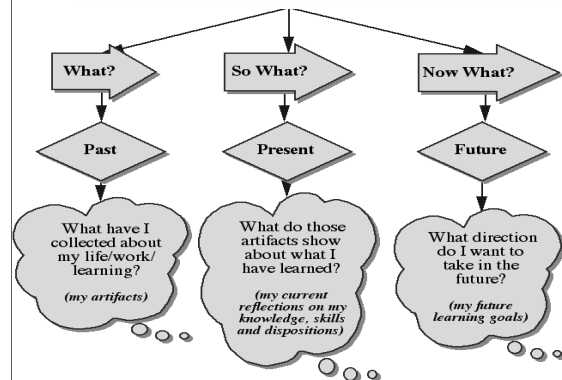
- Provide models and examples
- Begin with forms or prompts
- Move to journals/blogs
- Be careful that reflection in portfolios doesn't become an exercise in filling in the blanks on a web-based form.

## Portfolios provide Encouragement for Reflection

1. ...provides both the discipline and the freedom of structure, allowing one to see one's own work. (Sonnet)
2. ...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)
3. ...the process of self assessment leads one to setting goals for future development and professional growth. (Map)

(Mary Diez, 1994)

## Reflective Questions that tie the Past to the Future



## Writing a Reflection - 1

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

1. **Select:** What evidence/artifacts have you included?
2. **Describe:** This step involves a description of the circumstances, situation or issues related to the evidence or artifact. Four "W" questions are usually addressed:
  - **Who** was involved?
  - **What** were the circumstances, concerns, or issues?
  - **When** did the event occur?
  - **Where** did the event occur?

## Writing a Reflection - 2

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

3. **Analyze:** "digging deeper."
  - "Why" of the evidence or artifact
  - "How" of its relationship to teaching practice
4. **Appraise:** *In the previous three steps, you have described and analyzed an experience, a piece of evidence, or an activity. The actual self-assessment occurs at this stage as you interpret the activity or evidence and evaluate its appropriateness and impact.*
5. **Transform:** This step holds the greatest opportunity for growth as you use the insights gained from reflection in improving and transforming your practice.

## Digital Tools for Reflection

## Blogs and Wikis

## What is a blog?

- Abbreviation for “web log” which is an online journal organized in reverse chronological order...the most recent entry on top
- Emerging into the mainstream in the last 18 months
- Very popular with adolescent girls
- Free, open source and commercial tools available

## Blogs\* in Education

\*Web logs=online journals



<http://www.weblogg-ed.com/>

## What is a “wiki”

- Hawaiian term for “quick”
- A tool for collaborative writing
- Anyone who reads a wiki page can click the EDIT button and add or edit text
- Another “older” technology that is emerging into common use.

## Digital Tools for Reflection

## Digital Storytelling

## 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

## Digital Storytelling is BOTH...

HIGH TECH  
and  
HIGH TOUCH

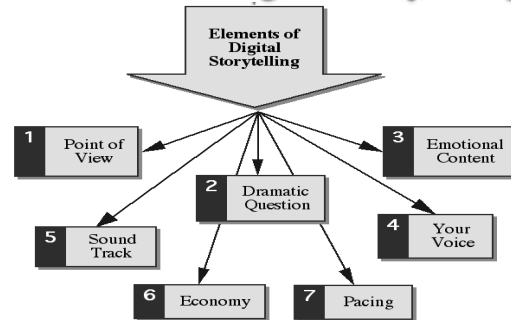


## What is Digital Storytelling?

- Created by a student teacher in her first digital storytelling workshop
- Play video



## Center for Digital Storytelling



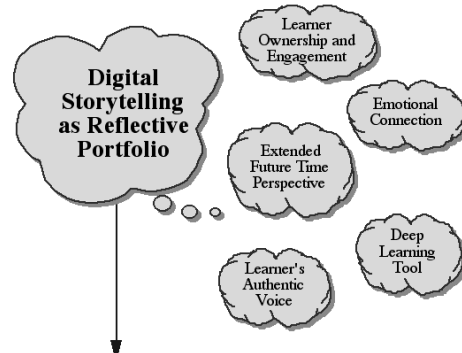
<http://www.storycenter.org>

## Why include Digital Storytelling in ePortfolios?

### Learner Motivation and Affect

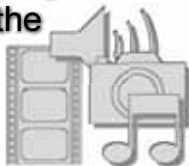
### Brain Research on Emotion in Learning

## 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?

- If your e-portfolios are just digital paper (text and images on the screen) you are losing a wonderful opportunity to really tell your story **in your own voice**.
- With the capability to **add multimedia**, audio and video, we can truly create an **engaging environment** to document the **milestones** of our lives.

## What's Your Story?

- We all have a story to add to our portfolios. These digital stories provide opportunities for a richness not possible in print.
- Some stories will represent the fresh innocence of youth, some will reflect the experiences of a rich life.
- The audiences might be worldwide, like the BBC Wales, but most likely the audiences will be small and intimate.

## Digital Story as Legacy

- These digital stories aren't just for professional development
- They aren't just for skills-based portfolios
- They are our legacy for those who come after us...the stories of our lives we give to our children's grandchildren.

## My Final Wish...

May all your **electronic portfolios** become dynamic **celebrations and stories of deep learning** across the lifespan.

## 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**

- Co-Director ISTE's  
Community & Assessment  
in PT3 Catalyst Grant
- [hbarrett@iste.org](mailto:hbarrett@iste.org)
- <http://electronicportfolios.org/>