

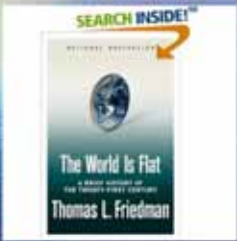
# Technology to Support Reflection and Deep Learning in High Schools

**Dr. Helen Barrett**  
 University of Alaska Anchorage (retired)  
 The REFLECT Initiative

## Themes


- 21st Century Learning
- Electronic Portfolios
- Assessment for Learning
- Reflection
- Storytelling
- Digital Storytelling
- Examples

## The World in Flat



- Thomas Friedman, New York Times Columnist
- A look at the change and globalization since Y2K

## A Whole New Mind



- Daniel Pink
- Balancing Right-Brain skills for the "Conceptual Age" with Left-Brain skills from the "Information Age"

### 6 Essential High-Concept, High Touch Aptitudes

*Dan Pink, A Whole New Mind*

1. **Design** (not just function) - create objects beautiful, whimsical, emotionally engaging
2. **Story** (not just argument) - the ability to fashion a compelling narrative
3. **Symphony** (not just focus) - synthesis--seeing the big picture
4. **Empathy** (not just logic) - forge relationships - care for others
5. **Play** (not just seriousness) - laughter, lightheartedness, games, humor
6. **Meaning** (not just accumulation) - purpose, transcendence, and spiritual fulfillment.

<http://www.21stcenturyskills.org/>



## The Partnership for 21st Century Skills

## Education that...

- Connects to students' lives
  - Reduces GAP between how students live and how they learn
- Reflects "How People Learn"
  1. Uses prior knowledge to build new understanding
  2. Able to organize knowledge within conceptual framework
  3. Metacognitive approach, take control of learning, monitor progress, improve achievement

## 6 Key Elements of 21st Century Learning

1. Emphasize core subjects
2. Emphasize learning skills
3. Use 21st century tools to develop learning skills
4. Teach and learn in a 21st century context
5. Teach and learn 21st century content
6. Use 21st century assessments that measure 21st century skills

Partnership for 21st Century Skills  
<http://www.21stcenturyskills.org/>

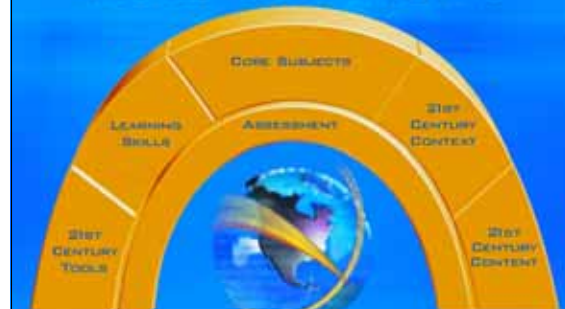
## 21st Century Learning Skills

- Information and Media Literacy Skills
- Communication Skills
- Critical Thinking and Systems Thinking
- Problem Identification, Formulation and Solution
- Creativity and Intellectual Curiosity
- Interpersonal and Collaborative Skills
- Self-Direction
- Accountability and Adaptability
- Social Responsibility

Partnership for 21st Century Skills  
<http://www.21stcenturyskills.org/>

## 21st Century Assessment

THE BRIDGE TO 21ST CENTURY LEARNING



## Technology Integration into Instruction



- ISTE:  
[http://cnets.iste.org/students/s\\_book.html](http://cnets.iste.org/students/s_book.html)
- Apple Learning Interchange  
<http://ali.apple.com/>
- George Lucas Education Foundation  
<http://www.glef.org/>

## The REFLECT Initiative


[reflect@taskstream.com](mailto:reflect@taskstream.com)

<http://electronicportfolios.org/reflect/>

A research project to assess the impact of electronic portfolios on student learning, motivation and engagement in secondary schools



### 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?

### Schlechty Center's Theory of Engagement



1. Engagement
  - Learn at high levels/ profound grasp
  - Retain what they learn
  - Transfer to new contexts
2. Strategic Compliance
3. Ritual Compliance
4. Retreatism
5. Rebellion

### 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

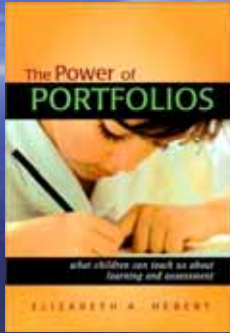
"Everything I know about portfolios was confirmed working with a kindergartener"

### 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 (2004) *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 (2004) *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 (2004) *The Power of Portfolios*. Jossey-Bass, p. ix.

"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)

## "The Blind Men and the Elephant"

Thanks to Alan Levine



## Eskimos and "Snow"

- 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>

## 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."

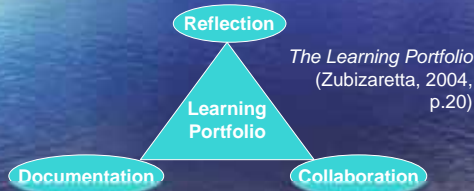
(Paulson & Paulson, 1991, p.2)

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

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

## Learning Portfolios

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



## Learning Portfolios

- Support reflection which is central to learning
  - "Folio Thinking"
- Reflection:
  - 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?**

**Purposes for Assessment**

- **Assessment OF Learning**  
= Summative Assessment
- **Assessment FOR Learning**  
= Formative (Classroom-based) Assessment
- **Past-to-Present**
- **Present-to-Future**

[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.

**Crucial Distinction**

- **Assessment OF Learning**  
How much have students learned as of a particular point in time?
- **Assessment FOR Learning**  
How can we use assessment to help students learn more?

Rick Stiggins  
Assessment Training Institute

**Overview**

	Assessment OF Learning	Assessment FOR Learning
Reason	Check Status	Improve Learning
To Inform	Others about students	Students about themselves
Focus	Standards	Enabling targets

Rick Stiggins  
Assessment Training Institute

Rick Stiggins  
Assessment Training Institute

	Assessment OF Learning	Assessment FOR Learning
Example	High stakes external assessments, Classroom tests used for grading	Assessments that diagnose needs or help students see themselves improve
Place in time	An event after learning	A process during learning

## The essential question

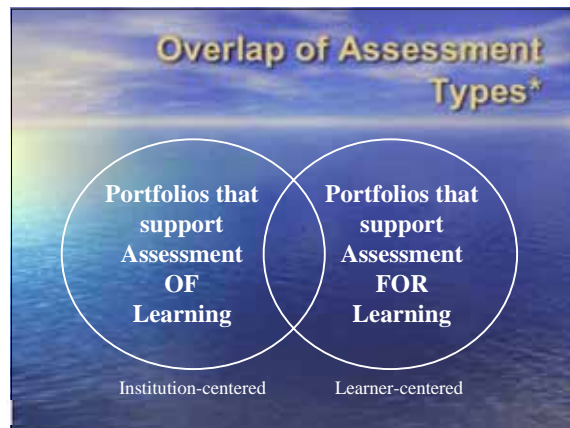
- Can we use assessment to help our students want to learn?

Rick Stiggins  
Assessment Training Institute

## Assessment FOR Learning Strategies

1. Student-friendly targets from the beginning (no surprises, no excuses)
2. Models of strong and weak work
3. Continuous descriptive feedback
4. Teach self-assessment and goal setting
5. Teach one facet of quality at a time
6. Teach focused revision (how to improve their work one facet at a time)
7. Teach self-reflection to track growth

Rick Stiggins  
Assessment Training Institute



## What is your portfolio philosophy?

- A standardized **checklist** of skills? (Positivist)

or

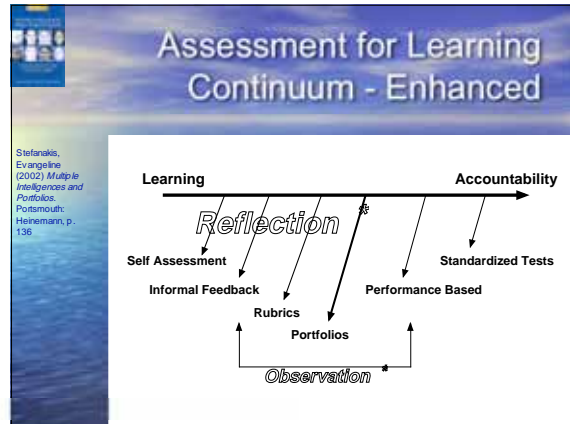
- A reflective **story** of deep learning? (Constructivist)

## Portfolio Differences

Assessment OF Learning	Assessment FOR Learning
• Purpose prescribed	• Purpose negotiated
• Artifacts mandated - scoring for external use	• Artifacts chosen - feedback to learner
• Organized by teacher	• Organized by learner
• Summative (Past to present)	• Formative (Present to future)
• Institution-centered	• Student-centered
• Requires extrinsic motivation	• Intrinsically motivating

### A Resource on K-12 Portfolios

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



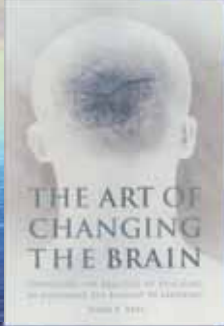
- ### Portfolio Processes
- Traditional + Technology**
- Collecting
  - Archiving
  - Selecting
  - Linking/Thinking
  - Reflecting
  - Storytelling
  - Directing
  - Collaborating
  - Celebrating
  - Publishing

## Reflection

The "Heart and Soul" of a Portfolio

- ### What is Reflection?
- Major theoretical roots:
    - Dewey
    - Habermas
    - Kolb
    - Schön
  - Dewey: "We do not learn from experience...we learn from reflecting on experience."

## Resource on Biology of Learning

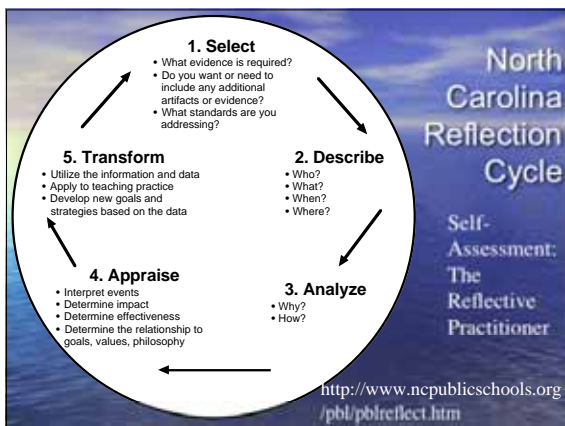
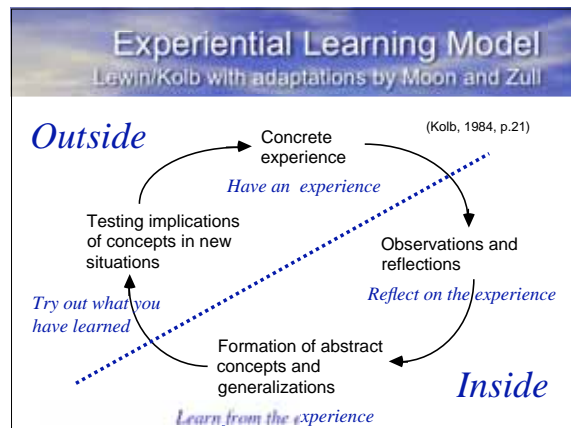
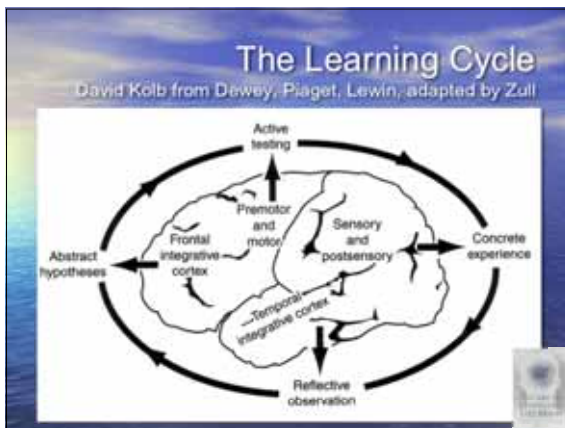


- Enriching the Practice of Teaching by Exploring the Biology of Learning
- James E. Zull
- Stylus Publishing Co.

## 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



## Reflection and Emotion


James Zull

- Hard to make meaning of experience unless it engages our emotions. (p.166)
- Reflection: a search for connections
- Sleep researchers: dreams help us make connections...we dream about what matters most. (p.168)
- For comprehension we need time. (p.168)

## 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



## 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



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

knowledge for acting/doing  
*reflection in action*



knowledge for planning actions  
and imagination  
*reflection for action*

knowledge of self derived from doing  
*reflection on action*

Norman Jackson  
Higher Education Academy, U.K.

## Digital Stories

- Naya: 7th Grade

Family Involvement



## Integrating Technology into Education

ISTE Essential Conditions  
Jigsaw Activity

# Demonstrations

John Carroll REFLECT Initiative  
Grant Participants

# The Change Process

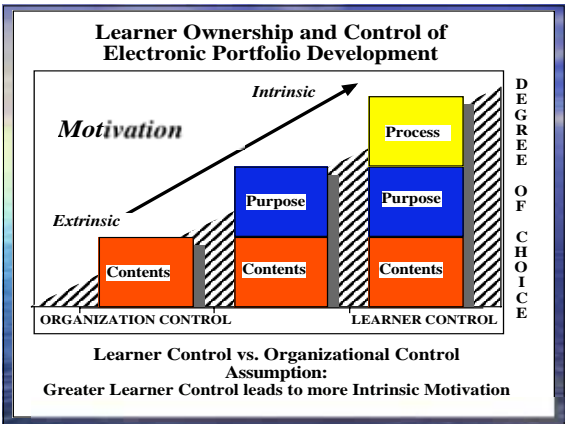
An Interactive Discussion

# Digital Tools for Reflection

# Digital Storytelling and Engagement

# Some concerns...

- Assessment for Learning
- Portfolios for Learning
- What about Motivation and Engagement?



# Linked to...

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

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

## How can you leverage the technologies students own?

- Accessibility from home computers
- Connectivity with cell phones & PDAs (digital images, reflections)
- Video storage or streaming video
- **Podcasting** = audio-only digital stories and blogs

## Digital Tools for Reflection

### Online Portfolios

## 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.

## Helping Students Tell Their Stories

- **COLLECT** more than text documents
  - Pictures
  - Audio
  - Video
- Focus on **REFLECTION** over time
- Help students make **CONNECTIONS**
- Support multimedia presentation formats

## Digital Storytelling Process

- Learners create a 2-4 minute digital video clip

- First person narrative [begins with a written script ~ 400 words]
- Told in their own voice [record script]
- Illustrated (mostly) by still images
- Music track to add emotional tone

Challenge  
8th grade

## 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

## 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



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

- Maybe you are a graduate student reflecting on what is drawing you into teaching
- Play "Coming Full Circle"
- Play "Deana"



## Digital Stories and e-Portfolios

- highly motivating project-based learning activity
- powerful artifacts in electronic portfolios
- the importance of reflection in e-portfolios
- tools for scaffolding reflection: blogging and digital storytelling
- overview of the literature on reflection and learning
- some new perspectives on storytelling as reflection on experience to improve learning (McDrury & Alterio)
- the role of reflection in brain-based learning (Zull)

## Digital Storytelling is BOTH...

HIGH TECH  
and  
HIGH TOUCH

## "Free" Digital Storytelling Tools

<http://electronicportfolios.org/digistory/tools.html>

### Macintosh

- Audio recording  
**Audacity**
- Image editing  
**iPhoto, GIMP**
- Video editing  
**iMovie**

### Windows

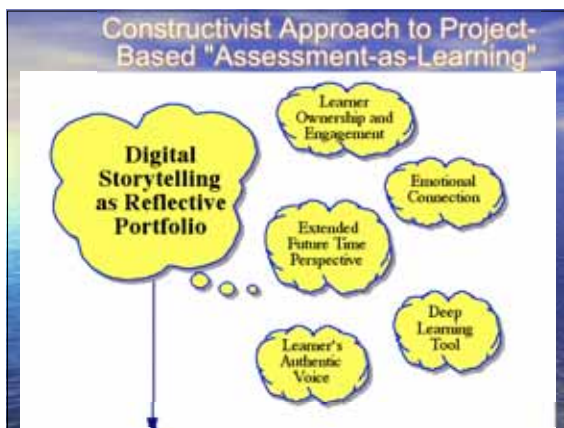
- Audio recording  
**Audacity**
- Image editing  
**GIMP**
- Video editing  
**MovieMaker2**



Why include Digital Storytelling in ePortfolios?

**Learner Motivation and Affect**

**Brain Research on Emotion in Learning**



**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

**Digital Paper or Digital Story?**

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

**Multimedia** = audio and video

## What's Your Story?

Richness not possible in print  
Audiences worldwide but most likely small and intimate.

## Digital Story as Legacy

Not just for professional development  
Or skills-based portfolios

## Digital Storytelling Becomes a Lifelong Skill

- Cousin of scrapbooking and genealogy
- Cross-age collaborations
- Children interview elders
- Illustrate with family photos

## Digital Storytelling Becomes a Lifelong 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

## More Digital Stories

- Play "SamanthaT"
- Play "Dad"

"Cradle to Grave"



## The REFLECT Initiative Vision ... in a nutshell:

To provide **teachers** with the **professional development** and **students** with the **tools**:

- to tell their **stories** with **pride!**
- to put **heart** and **soul** and **voice** into their portfolios!

## Professional Development in The REFLECT Initiative

<p>Philosophy &amp; Pedagogy</p> <ul style="list-style-type: none"> <li>• Teachers in Professional Learning Communities</li> <li>• 21st Century Learning</li> <li>• Assessment FOR Learning</li> <li>• Electronic Portfolios</li> </ul>	<p>Student-Centered Learning</p> <ul style="list-style-type: none"> <li>• Student Engagement</li> <li>• Project-Based Learning</li> <li>• Technology Integration</li> <li>• Reflection for Deep Learning</li> <li>• Digital Storytelling</li> </ul>
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## My own story

- "One good example is worth 1000 theories" ->
- 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"




## My Final Wish...

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

## Dr. Helen Barrett

- Research Project Director, The REFLECT Initiative
- eportfolios@mac.com
- <http://electronicportfolios.org/>