Student Electronic Portfolios

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Web Site on Electronic Portfolios

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Objectives

- Become aware of the **questions to ask** when planning to implement electronic portfolios with students.
- Become aware of the **various strategies** for authoring electronic portfolios with students at different age levels
- **Understand the process** for developing electronic portfolios with students
  - decide on purpose for the portfolio
  - describe the audience for the portfolio
  - decide on the contents of the portfolio
  - decide which software tools are most appropriate for the portfolio context

Objectives (continued)

- Become aware of **the technologies** needed in the classroom to develop electronic portfolios
- Become aware of **the skills teachers need** to support students developing electronic portfolios
- Gain **hands-on experience** with various software packages for developing electronic portfolios with students:
  - Grady Profile
  - Productivity software
    (word processors, databases, slide shows)
  - HyperStudio

Hands-on Activities

- Try out Grady Profile for the Macintosh
- Try out a HyperStudio template (Forest Technologies)
- Create a template using any tool you like:
  - Any Word Processor (or WWW page editor)
  - AppleWorks Database (or FileMaker Pro)
  - PowerPoint or AppleWorks Slide Show
  - HyperStudio

What is a portfolio?

- a purposeful collection of student work that demonstrates effort, progress and achievement (based on standards)
- provides a richer picture of student performance than can be gained from more traditional, objective forms of assessment
- traditional standards-based portfolios are 3-ring notebooks, organized with dividers and sections for documents demonstrating each standard

(Campbell, et.al., 1997)

What is an Electronic Portfolio?

- A portfolio that uses electronic technologies
- allowing the developer to collect and organize portfolio artifacts in many media types (audio, video, graphics, text);
- AND using **hypertext links,** organize the material to
- connect evidence to appropriate standards.

Electronic or Digital Portfolio?

- An Electronic Portfolio contains artifacts that may be in analog form, such as a video tape, or may be in computer-readable form
- A Digital Portfolio contains artifacts that have been transformed into computer-readable form (digitized/scanned/input)

Why use technology? Sheingold's Reasons (1992)

- To make work in many media accessible, portable, examinable, widely distributable
- To make performance replayable and reviewable; it is important to see more than once
- To address ownership issues of student-created work
- To address storage issues

Why use technology? (Barrett's assumptions, 1998)

- Today, many documents are initially created with a computer, anyway.
- Hypertext links allow clear connections between standards and portfolio artifacts
- Creating an EP can develop teachers' skills in using multimedia technology
- Modeling: A teacher with an EP will be more likely to have students with EPs.
- It's fun & easier to manage the process, especially storage, presentation, and duplication

What are the phases of Portfolio Development?

Portfolio Development Literature

- Collection
- Selection
- Reflection
- Projection (or Direction)

(Danielson & Abrutyn (1997) An Introduction to Using Portfolios in the Classroom. Alexandria: Association for Supervision and Curriculum Development.

Multimedia Development Literature

- Assess/Decide
- Design
- Develop
- Implement
- Evaluate

Portfolio Organizer

(decision-making points, not a step-by-step process)

- Purpose, Type, Audience, Time Frame
- Categories for Entries
- Criteria for Entries
- Work Samples
- Reflections
- Storing and Organizing Portfolios
- Sharing the Learning: Conferences & Responses
- Goal Setting
- Self-Evaluation
- Getting Started

Rolheiser, Bower, & Stevahn (in press) The Portfolio Organizer: A Guide for Decision Making

Bena Kallick's process

- Collection
- Selection
- Reflection
- Direction (future goals)
  -- and I add:
- Connection (conferencing)

The Portfolio Connection

(Burke, Fogarty, Belgrad, 1994)

- **PROJECT** purposes
- **COLLECT** and organize artifacts
- **SELECT** key artifacts
- **INTERJECT** personality
- **REFLECT** metacognitively
- **INSPECT** to self-assess
- **PERFECT** and evaluate
- **CONNECT** and conference
- **INJECT/EJECT** to update
- **RESPECT** accomplishments

The Portfolio Connection
(Burke, Fogarty, Belgrad, 1994)

- **PROJECT** purposes
  - the "big picture"
  goals for the portfolio

Projecting is focusing.

The Portfolio Connection
(Burke, Fogarty, Belgrad, 1994)

- **COLLECT** and organize the artifacts

Collection is abundance.

The Portfolio Connection
(Burke, Fogarty, Belgrad, 1994)

- **SELECT** key artifacts
  - contents of the portfolio
  - prioritize

Selection is abandonment.

The Portfolio Connection
(Burke, Fogarty, Belgrad, 1994)

- **INTERJECT** personality
  - cover, design, layouts
  - personal touch

Interjection is style and flair.

The Portfolio Connection
(Burke, Fogarty, Belgrad, 1994)

- **REFLECT** metacognitively
  - label each artifact for meaning and value
  - give voice to why an artifact is included

Reflection is a mirror into the self.

Reflection and Learning

"We do not learn from experience.

We learn from reflecting on experience."

-John Dewey

…from Kay Burke (1997) Designing Professional Portfolios for Change

"Without written commentaries, explanations and reflections, the portfolio is no more than a notebook of artifacts or a scrapbook of teaching mementos. Such a portfolio does not reveal the criteria for collecting the contents, the thoughts of why the items were selected, or what the teacher and the students learned."

The Portfolio Connection
(Burke, Fogarty, Belgrad, 1994)

- **INSPECT** to Self-Assess
  - meet long-term & short-term goals
  - evidence of strengths & weaknesses

Inspection ensures one is on course.

The Portfolio Connection
(Burke, Fogarty, Belgrad, 1994)

- **PERFECT** and Evaluate
  - fine-tuning the content
  - getting ready for grading

Perfecting is to make a polished final draft or a finished product.

The Portfolio Connection
(Burke, Fogarty, Belgrad, 1994)

- **CONNECT** and Conference
  - share the finished product with someone
  - use portfolio as basis for meaningful dialogue

Connecting is conversing.

The Portfolio Connection
(Burke, Fogarty, Belgrad, 1994)

- **INJECT/EJECT** to update
  - keeps portfolio manageable
  - regular honing keeps the portfolio fresh

Injecting/ejecting is the cycle of the portfolio.

The Portfolio Connection
(Burke, Fogarty, Belgrad, 1994)

- **RESPECT** Accomplishments - formal exhibition before an audience

Respecting is celebration.

The Portfolio Connection
(Burke, Fogarty, Belgrad, 1994)

- **Three Options for Portfolio Development**
- **Essential Portfolio**
  - **Collect, Select, Reflect**
- **Expanded Portfolio**
  - **Project, Collect, Select, Reflect, Perfect, Connect**
- **Elaborated Portfolio**
  - **Project, Collect, Select, Interject, Reflect, Inspect, Perfect, Connect, Inject/Eject, Respect**

DDD-E Process (1)

- **Decide:**
  - goals of portfolio based on learner outcome goals that should be based on national/state/local **standards** with associated evaluation rubrics
  - describe the assessment **context**
  - describe the **audience**(s) for the portfolio (student, parent, college, community?)
  - **content** of portfolio items (determined by context)

Elements of Portfolio Planning

- Purpose
- Audience
- Process

A few words about the primary audience for the portfolio

- If you focus on electronic portfolios for employment AND the primary audience (principals) doesn't look at it, then students become **frustrated**.
- If you focus on electronic portfolios for evidence of professional development, AND the primary audience (the student & faculty) uses the portfolio to validate that growth, then students become **empowered**.

DDD-E Process (2)

- **Design**
  - Determine which software **tools** are most appropriate for the portfolio context
  - Determine which **storage** and **presentation medium** is most appropriate for the situation
  - Storyboard the portfolio

What is the best electronic portfolio program?

- It depends!
  - on the assessment context
  - and a variety of other factors, human and technological, that exist in a classroom, school or district.

Authoring software

There are a variety of authoring software packages which allow the creation of

hypertext links

between goals, student work samples in multiple forms of media, rubrics, and assessment.

Importance of Using Appropriate Software

The software used to create the electronic portfolio will control, restrict, or enhance the portfolio development process.

Form should follow function, and the electronic portfolio software selected should match the vision, style and skills of the portfolio developer, as well as the technology available.

How do you decide what tools to use?

- **Level of Teacher Skill (Relative Ease of Use)**
- **Level of Technology Required**
- **Other factors**

  (Learning & Leading with Technology, October, 1998)

Level of Teacher Skill (Relative Ease of Use)

1	2	3	4	5
Limited experience with desktop computer - able to use mouse, menus, run simple programs	Level 1 PLUS proficiency with a word processor, basic e-mail and Internet browsing; enter data into a pre-designed database	Level 2 PLUS able to build a simple hypertext (non-linear) document with hypertext links (using either a hypermedia program like HyperStudio, Adobe Acrobat Exchange, or an HTML WYSIWYG editor)	Level 3 PLUS able to record sounds, scan images, output computer screens to a VCR; design an original database	Level 4 PLUS multimedia programming or HTML authoring; create QuickTime movies live or from tape; program a relational database

Level of Technology Required

1	2	3	4	5
No computer	A single computer with 8 MB RAM, 80 MB HD, no AV input/output	One or two computers with 16 MB RAM, 250+ MB HD, simple AV input (like QuickCam)	Three or four computers, one of which has 32+ MB RAM, 500+ MB HD, AV input and output, scanner, VCR, video camera, high-density storage device (such as Zip drive)	Level 4 PLUS CD-Recorder, at least two computers with 48+ MB RAM Optional: video editing hardware and software

Comparison of Construction Tools

	Relational data base	**Hypermedia "card" file (including templates)**	**Multimedia authoring software**	**WWW Pages**	**Acrobat Reader**	**Proprietary software**
Common development tools	FileMaker Pro	HyperStudio Digital Chisel	Macromedia Authorware, Director	Adobe PageMill, Claris Home Page	Adobe Acrobat Exchange 3.01	Grady Profile Personna Plus
Structure & Links	Structured fields/records/ files linked together by common fields	Electronic cards (screens) linked together by "buttons"	Icon-based or time-based multimedia authoring environment	WWW pages viewed with a Web Browser (Netscape or Explorer) using links created in HTML	Postscript-based pages that can be navigated sequentially, or using bookmarks, links, or buttons	Varied: Grady Profile has Hypercard base Personna Plus uses relational database engine
Player available	Yes	Yes	Self-contained	Browser (free)	Reader (free)	?
Advantages	Flexible reporting Network-friendly Web accessible Cross-platform	Widely accessible in classrooms Construction tools included	Most flexibility in development CD-ROM Cross-platform	Web-accessible Cross-platform	Web-accessible Cross-platform Create files from any application Ideal for CD-R	Pre-designed and structured
Disadvantages	Limitation of size of files Requires player	Not directly web-accessible View limited to screen size	Steep learning curve	Multimedia (video) not well integrated Complex authoring	Size of files Limited construction tools	Grady: not Web-accessible, Mac only, inflexible
Ease of Use*	4 to develop 2 to use	3 to develop	5	2 with editor 4 without	2	2 (Grady) ? (Personna)
Technology Required	3	3	5	4	4	2 4
Cost (with Ed. discounts)	$49	$39-$199	$150-$1,000	$49-$79	$49	Grady $195 Personna ?

Generic Construction Tools (off-the-shelf software)

- **Relational Data Bases**, - FileMaker Pro 4.0 or Microsoft Access
- **Hypermedia "card" formats**, such as HyperStudio, HyperCard, Digital Chisel, or SuperLink + commercial templates available.
- **Multimedia authoring software**, such as Macromedia Authorware, Macromedia Director
- **Network-compatible hypermedia**:
  - **HTML**/WWW Pages
  - **Adobe Acrobat** (PDF)
- **Office "Suite" Multimedia slide shows**, such as Microsoft PowerPoint, AppleWorks

Electronic Portfolio Development Tools

Software environment

Relational data base

Common Development Tools

Filemaker Pro, Microsoft Access

Structure and links

Structured fields/records/files linked together by common fields

Advantages

Flexible reporting - Network-friendly - Web-accessible - Cross Platform
Most effective in tracking and reporting achievement of standards

Disadvantages

Limitation on size of files - Requires player - Requires higher skill level to develop

Ease of Use

4 to develop
2 to use

Technology Required 3

Cost with ed. discounts $49-$199

Player available Yes - free

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Electronic Portfolio Development Tools

Software environment

Hypermedia "card" file (including templates)

Common Development Tools

HyperStudio, Digital Chisel, HyperCard, Toolbook

Structure and links

Electronic cards (screens) linked together by "buttons"

Advantages

Widely accessible in classroom. Construction and display tools available in one program.

Disadvantages

Not directly web-accessible. View limited to screen size. Effort required to link standards and portfolio artifacts.

Ease of Use 3 to develop

Technology Required 3

Cost with ed. discounts $39-$199

Player available Yes - free

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Electronic Portfolio Development Tools

Software environment

Multimedia authoring software

Common Development Tools

Macromedia Authorware, Director

Structure and links

Icon-based or time-based multimedia authoring environment

Advantages

Most flexibility in developing for CD-ROM publishing. Cross-platform.

Disadvantages

Steep learning curve. Effort required to link standards and portfolio artifacts.

Ease of Use 5

Technology Required 5

Cost with ed. discounts $150-$1000

Player available Self-contained files

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Electronic Portfolio Development Tools

Software environment

World Wide Web Pages

Common Development Tools

Adobe PageMill, Claris Home Page, Microsoft Front Page, many more

Structure and links

WWW pages viewed with a Web Browser (Netscape or Explorer) using links created in HTML

Advantages

Web-accessible. Cross-platform.

Disadvantages

Multimedia (video) not well integrated. Complex authoring environment.

Ease of Use

2 with editor
4 without

Technology Required

4

Cost with ed. discounts

free - $99

Player available

Web browser - free

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Electronic Portfolio Development Tools

Software environment

Proprietary Software

Common Development Tools

Grady Profile, Personna Plus

Structure and links

Varied: Grady Profile has HyperCard base. Personna Plus uses relational database engine.

Advantages

Pre-designed and structured.

Disadvantages

Grady: not web-accessible, Mac only, inflexible layout.
Personna: ?

Ease of Use

2 (Grady Profile)
? (Personna Plus)

Technology Required

2-4

Cost with ed. discounts

Grady $195

Player available

?

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Electronic Portfolio Development Tools

Software environment

Multimedia Slide Shows

Common Development Tools

PowerPoint, ClarisWorks Slide Show, Astound

Structure and links

Electronic slides, most often shown in linear sequence.

Advantages

Commonly-available tool.

Disadvantages

Availability of hypertext links between standards and portfolio artifacts.

Ease of Use 3

Technology Required 4

Cost with ed. discounts $29+

Player available

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Electronic Portfolio Development Tools

Software environment

Digital Video

Common Development Tools

Avid Cinema, Adobe Premiere, Movie Player Pro, Apple Video Player

Structure and links

digitized video, usually in QuickTime or AVI format

Advantages

www access, high interactivity. random access, editing

Disadvantages

file size, storage, quality, bandwidth requirements, hardware requirements to digitize.

Ease of Use 5

Technology Required 5

Cost with ed. discounts $29+++

Player available Yes - Free

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Electronic Portfolio Development Tools

Software environment

Analog Video

Common Development Tools

video editors

Structure and links

analog video on a variety of formats (i.e., VHS, 8mm)

Advantages

ubiquitous access, cheap storage media, acceptable quality, relatively low cost hardware requirements

Disadvantages

linear access, low interactivity, no www access, storage, editing

Ease of Use 4

Technology Required 1

Cost with ed. discounts ?

Player available VCR

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Electronic Portfolio Development Tools

Software environment

Adobe Acrobat Reader

Common Development Tools

Adobe Acrobat Exchange 3.01

Structure and links

Postscript-based pages that can be navigated sequentially, or using bookmarks, links, or buttons

Advantages

Web-accessible. Cross-platform. Create files from any application. Ideal for Compact-disc-recordable portfolios. Handles multimedia well.

Disadvantages

Size of file. Limited built-in editing tools. Requires another program to create files.

Ease of Use 2

Technology Required 4

Cost with ed. discounts $49

Player available Acrobat Reader - free

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Storing the Working Portfolio

- Computer diskette
- CD-Recordable (CD-R) & CD-ReWritable (CD-RW)
- Video Tape
- High density floppy (Zip disk)
- WWW or Intranet
- Jaz disk
- DVD-RAM (coming soon)

Publishing the Presentation (Formal) Portfolio

- CD-R
- Video Tape
- WWW
- DVD-RAM

The choice depends on the audience for the portfolio

DDD-E Process (3)

- **Develop**
  - gather **multimedia materials** to include in the portfolio which represent learner's achievement (preferably linked to standards, preferably in a relational database)
  - record **student self-reflection** on work and achievement of goals
  - record **teacher feedback** on student work and achievement of goals
  - organize with **hypermedia links** between goals, student work samples, rubrics, and assessment

Collection

- The primary activity of a working portfolio.
- Don’t save everything!
- Purpose and audience and future use of artifacts will determine content.

Selection

- Students examine what has been collected to decide what should be moved to a more permanent assessment or display portfolio.
- Criteria should reflect the learning objectives of the curriculum.

(Danielson & Abrutyn [ASCD], 1997, p. 13)

- This is where many electronic portfolios end!

Reflection

- Students articulate their thinking about each piece in their portfolio.
- Through this process of reflection, students become increasingly aware of themselves as learners.
- Use reflective prompts.
- Include reflections on every piece plus overall reflection on entire portfolio.

(Danielson & Abrutyn [ASCD], 1997, pp.15-16)

Reflection

- "The use of portfolios not only helps students make better progress on the skills in the curriculum; it also helps them develop critical skills such as **reflection and self-evaluation** which are fundamental to excellence in any walk of life."
(Danielson & Abrutyn [ASCD], 1997, p. 26)

Organizing framework

- Most states have adopted standards for both students, practicing teachers, and new teachers. These standards form an ideal framework for thinking about organizing an electronic portfolio.

A portfolio without standards:

- is just a multimedia presentation
- or a fancy electronic resume
- or a digital scrapbook

A portfolio without reflections:

- is just a multimedia presentation
- or a fancy electronic resume
- or a digital scrapbook

DDD-E Process (4)

- **Evaluate**
  - **present** portfolio to appropriate audience (by student, in age-appropriate situations)
  - **evaluate** effectiveness of portfolio related to the purpose and assessment context

Direction

- Looking ahead and setting goals for the future.
- Students see patterns in their work.
- These observations can help identify goals for future learning.

(Danielson & Abrutyn [ASCD], 1997, p. 18)

Electronic Portfolio Process

- Using any software as an electronic portfolio development environment
- Process can also apply to Hypermedia programs (such as HyperStudio) and HTML (Web pages)
- Focus on the stages of development

Several Electronic Portfolio examples:

Faculty Portfolio (Adobe Acrobat on CD-R)
UA Anchorage MAT Student Portfolio
Macromedia Director Teaching Portfolio
Anchorage Sch. Dist. Teacher Portfolio

Templates: Ed Tech Endorsement
Alaska State Teacher Standards
Alaska State Administrator Standards

Other Examples

Coalition of Essential Schools Model

Kathleen Fischer - HTML on WWW

RMIT (Australia) - HTML on WWW

Student (Alaska) - HyperStudio

Teacher (Alaska) - HyperStudio

Hands-on Time!

- Try out Grady Profile for the Macintosh
- Try out a HyperStudio template (Forest Technologies)
- Create a template using any tool you like:
  - Any Word Processor (or WWW page editor)
  - AppleWorks Database (or FileMaker Pro)
  - PowerPoint or AppleWorks Slide Show
  - HyperStudio

Adobe Acrobat Demo

Portable Document Format

What is PDF?

- PDF stands for

  Portable Document Format.
- It was developed by Adobe Corporation to allow efficient electronic distribution of large documents.

What is PDF?

- A PDF file will look the same on the screen and in print regardless of what kind of computer you are using or which software package it was created from.
- A large document can be compressed small enough to download quickly, and displays text and pictures as if you were looking at the original book or brochure.

Why create a digital portfolio in PDF rather than HTML?

- NO programming or coding files - easier to learn
- WYSIWYG - PDF files look exactly like the original document
- All one document, not fragmented files (graphics & text)
- Easier to integrate multimedia (sound and video)

Why create a digital portfolio in PDF rather than HTML?

- Ideal format for CD-ROM
- Easily integrate documents created by a variety of different software packages
- A variety of ways to navigate a document:
  - Bookmarks
  - Links
  - Thumbnails
  - Toolbar

HTML or PDF?

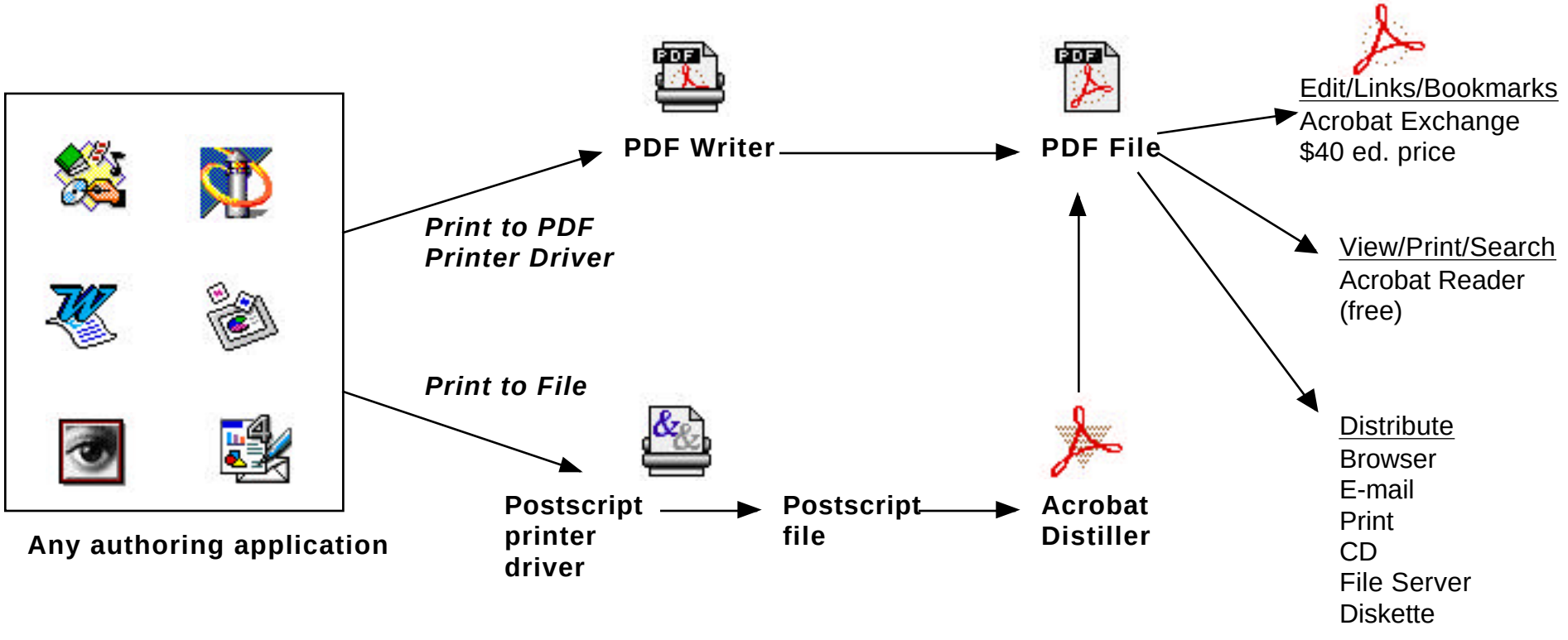
HTML Works Best	Both Work Well	PDF Works Best
HTML WSSIWYG editors	Word processing programs	Desktop publishing programs
Text editors	Spreadsheet programs	Illustration programs
Database programs	Document yet to be created	Presentation software
Documents already tagged (SGML)	Document in RTF format	Document already produced
e-mail	Basic specification sheets	Document exists on paper only
Memos	Graphs	Newsletters
Basic letters	Order forms (information receipt)	Magazines
Simple reports	Links to URL's (WWW)	Posters
Various text-based documents	Mailto: links	Annual reports
Server side information (two-way)	CGI's (Image maps)	Books, brochures
Server-push information	Forms	URL's with links over text & graphics
Index service (search and retrieve)		Document-based security
Database connectivity		Movie and sound playback
Frames		High-resolution images
Java applets		Page numbers
		Text over images

Source: Kent, G. *Internet Publishing with Acrobat* Adobe Press, San Jose, CA, 1996.

Other References:

1. Adobe Acrobat *Classroom in a Book* (with CD-ROM). The official training workbook (Mac and Windows). Adobe Systems Incorporated, San Jose, CA, 1997.

2. Alspach, Ted *Acrobat for Macintosh and Windows* Peachpit Press, Berkeley, CA, 1997


Any authoring application
Print to PDF
Printer Driver
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Edit/Links/Bookmarks
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View/Print/Search
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Print to File
Postscript
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Acrobat
Distiller
Distribute
Browser
E-mail
Print
CD
File Server
Diskette

Feature

Strategic Questions

What to Consider When Planning for Electronic Portfolios

Assessing a student's development over time is always a challenge, especially when the student's earlier work is not readily available. In this feature article, the author discusses how one alternative assessment form, the electronic portfolio, can help teachers track student improvements over long periods. She also presents the most important questions that educators must answer as they consider using such assessments.

By Helen C. Barrett (L&Lw/T, October, 1998)

What Should a Traditional or Electronic Portfolio Include?

A portfolio should include the following elements:

- learner goals
- guidelines for selecting materials (to keep the collection from growing haphazardly)
- work samples chosen by both student and teacher (the "artifacts")
- teacher feedback
- student self-reflection pieces
- clear and appropriate criteria for evaluating work (rubrics based on standards)
- standards and examples of good work

Table 1. Teacher-Centered or Student-Centered?

Teacher-Centered	Mixed Model	Learner-Centered
Teachers take full responsibility for all aspects of the electronic portfolio process; may have parent volunteers to help.	Where appropriate, teachers share responsibility with students, who lead their own parent conferences. Students collect most of the artifacts and digitize some of the work.	Students are completely in charge of their own portfolios, including digitizing work samples, storage, and presentation.
Self-assessment: Little or no student self-assessment or peer or parent involvement in assessment.	Self-assessment: Collaboration in self-assessment is encouraged.	Self-assessment: Students are responsible for assessing their own work, often in collaboration with peers, parents, teachers, and others.

1. What is the purpose of the portfolio?

The portfolio's purpose and varied audiences will determine many of the following context factors. These factors relate not only to the purpose of the portfolio, but also to other learner characteristics. We assume that different ages and audiences will lead to different portfolios and purposes and thus different formats for storage and publication.

UCLA's National Center for Research on Evaluation, Standards, and Student Testing (CRESST) identified a preliminary list of various assessment purposes that it used for classification in a database on alternative assessment strategies. Information from the list has been distilled into Table 2, which shows each type of assessment and its potential primary audience.

2. How will you store the working portfolio?

The working portfolio is distinct from the formal one. It serves to store all artifacts of student work as they are collected. The medium selected thus should allow both easy access and reliable storage.

Examples include computer disks (floppies or hard drives), scannable paper, rewritable compact discs (CD-RWs), videotape, high-density disks (e.g., Zip or Jaz disks), and intranet (building or district) or password-protected servers.

3. How will you publish the formal portfolio?

Once portfolio artifacts are collected and organized, a formal or presentation portfolio is developed. This usually requires a different publishing format or medium.

Decisions here should be based on the portfolio's primary audience and the type of technology available. Examples include CD-ROMs, videotape, intranet (building or district) or password-protected servers, and the Internet (in appropriate circumstances).

4. How will you guarantee secure assessment information?

In other words, how can you make sure that the electronically stored student assessment information will remain secure and confidential?

5. Can you use technology to collect observational assessment data?

If so, only two programs—Learner Profile and Grady Profile—are commercially available, and only Grady is capable of storing portfolio items.

Other Assessment Context Factors

A few other important questions also need to be answered.

- What is the student's age?
- What time frame will the portfolio cover?
- What kinds of outcomes will be assessed?
- What is the focus and type of evidence being collected?
- What multimedia formats must be included to illustrate student efforts, progress, and achievement?
- Do you want to correlate student performance to state or district standards— that is, document the achievement of specific standards by linking them to specific evidence such as artifacts, exhibitions, or performances?

Resource Questions

1. What is the stakeholder's experience using traditional portfolio-based assessment?

1	2	3	4	5
Limited experience in storing samples of student work in file folders	Regularly uses portfolios as teacher-centered assessment tool	Students and teachers collaboratively select items to go into student's portfolio, using well-defined rubrics to evaluate student work	Level 3 and portfolios incorporate standards (national, state or district) and stakeholders have access to exemplars for comparison	Level 4 and maintains student-centered assessment environment, including student-led conferences

2. At what level are the teachers' computer skills?

1	2	3	4	5
Limited experience with desktop computers but able to use mouse and menus and run simple programs	Level 1 and proficient with a word processor, basic e-mail, and Internet browsing; can enter data into a predesigned database	Level 2 and able to build a simple hypertext (nonlinear) document with links using a hypermedia program such as HyperStudio or Adobe Acrobat Exchange or an HTML WYSIWYG editor	Level 3 and able to record sounds, scan images, output computer screens to a VCR, and design an original database	Level 4 and multimedia programming or HTML authoring; can also create QuickTime movies live or from tape; able to program a relational database

3. What is the level of student access to computers?

1	2	3	4	5
Little or no access during a typical week	Access to a computer for at least two hours a week; 20:1 student-to-computer ratio	Access to a computer for at least half an hour a day; 15:1 student-to-computer ratio	Access to a computer for at least one hour a day; 10:1 student-to-computer ratio	Access to a computer for at least two hours a day; 5:1 student-to-computer ratio

4. What is the students' level of technology competence and independence in using a computer? (Is it age-dependent?)

1	2	3	4	5
Limited experience with desktop computers but able to use mouse and menus, and run simple programs	Level 1 and proficient with a word processor, basic e-mail, and Internet browsing; can enter data into a predesigned database	Level 2 and able to build a simple hypertext (nonlinear) document with links using a hypermedia program such as HyperStudio or Adobe Acrobat Exchange or an HTML WYSIWYG editor	Level 3 and able to record sounds, scan images, output computer screens to a VCR, and design an original database	Level 4 and multimedia programming or HTML authoring; can also create QuickTime movies live or from tape; able to program a relational database

5. What technology is already available in the classroom? Describe computers, including RAM and hard-drive storage capacity, and every 18 months look for the minimum technology capability to double and costs to decrease by half for the same power and capacity.

1	2	3	4	5
No computer	Single computer with 8 MB RAM, 80 MB HD, no AV input/output	One or two computers with 16 MB RAM, 250+ MB HD, simple AV input (such as QuickCam)	Three or four computers, one of which has 32+ MB RAM, 500+ MB HD, AV input and output, scanner, VCR, video camera, high-density floppy (such as a Zip drive)	Level 4 and CD-ROM recorder, at least two computers with 64+ MB RAM; digital video editing hardware and software. Extra Gb+ storage (such as Jaz drive)

6. What type of networking is available in a classroom, building, or district? Is there a server?

1	2	3	4	5
No network, only stand-alone systems	Printer sharing and file sharing only via network	Dial-up PPP access to network through 28.8 modem	Ethernet network with 56K access to district server	Full TCP/IP (Internet access at T-1 or Ethernet speed); WWW server in building

7. How much budget is available for additional hardware and software?

1	2	3	4	5
None	$300 per classroom	$600 per classroom	$2,000 per classroom	$5,000+ per classroom

8. How much budget is available for staff development (time and cost) and support?

1	2	3	4	5
None	After-school workshop or credit class on own time (or both)	Inservice days dedicated to implement-ation	Release time for teachers to visit other class-rooms	Release time and in-class support

Which Supporting Technologies Will Manage the Digitizing Process?

Authoring Software

Most people know how to store work in paper files and folders but not how to organize information electronically on a computer for easy storage and retrieval. A good authoring program helps students construct and organize their portfolios and presentations. Tables 3 and 4 list different software alternatives, using either generic authoring software or commercial software that has been developed specifically for electronic portfolios.

See Table 3 and Table 4

Hardware Add-Ons

Many people are learning how to use desktop computers for both professional and personal productivity. They may not know, however, the types of additional equipment that will enable multimedia production for presentations and portfolios. Fortunately, the addition of three inexpensive items to a desktop computer can produce a highly effective electronic-portfolio development station:

- a $99 “eyeball” video camera
- a page scanner (less than $150)
- a high-density floppy drive (such as a Zip drive; less than $150).

Become a “digital pack rat”

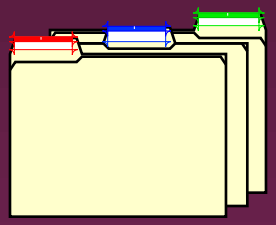
- Set up an electronic filing system

- Use “high density storage” devices
  - Zip disks, Jaz disks
  - CD-R, DVD-RAM

- Don’t leave the “collection/selection” until the last minute
- Plan for an electronic portfolio from the beginning of the program

Identify standards

- Use for portfolio organization
- Set up “folders” to store artifact for each standard
- Suggested Standards:
  NCATE/ISTE (Technology)
  INTASC (Pre-service)
  NBPTS (National certification)
  State or Local Teaching Standards



Select artifacts

- Select the artifacts that demonstrate achievement of each standard
- Possible types of artifacts to include:
  - significant papers, projects;
  - evaluations from all practicum/field experiences;
  - professional correspondence, letters of reference;
  - letters of recognition, awards, certificates, etc.;
  - samples of effective and reflective writing;
  - stories, journal entries, articles, manuals ;
  - photographs, drawings, sketches;
  - lesson plans/curriculum that you have created;
  - audio, video, or other electronic evidence;

Write reflective statements

- For each standard
  OR
- For each artifact

- Could set up a standard form to be completed
  - » Using a database program
  - » Using a PDF form with “fields”

Electronic Portfolio Artifact

Artifact for Standard # 1 Basic Technology Operations and Concepts

Indicator

1.1.4 operate and interface peripheral devices with a computer system supporting imaging including scanner, digital camera, and/or video camera.

Name of Artifact

Date

Source

Type of Media

Rationale Statement

Artifact

Create an outline or storyboard

- Use word processor with outlining (such as Microsoft Word)

  OR

- Use slide show with outlining (such as PowerPoint)

  OR

- Use mapping software (such as Inspiration)

Create a Table of Contents

- Divide into sections:
  - Introduction
    - Acknowledgement
    - Table of Contents
  - The Standards and Reflections
  - The artifacts

Create a portfolio matrix

- Single page overview/cross reference if individual artifacts document achievement of more than one standard
- Use spreadsheet or table in word processor

	A	B	C	D	E	F	G	H	I
1		Standard 1	Standard 2	Standard 3	Standard 4	Standard 5	Standard 6	Standard 7	Standard 8
2	Artifacts								
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

Educational Technology Foundations Standards
International Society for Technology in Education

Indicator	Artifact ------>	1	2	3	4	5	6	7	8
1.1.1 operate a multimedia computer system with related peripheral devices to successfully install and use a variety of software packages.									
1.1.2 use terminology related to computers and technology appropriately in written and oral communications.									
1.1.3 describe and implement basic troubleshooting techniques related to using a multimedia system with related peripheral devices.									
1.1.4 operate and interface peripheral devices with a computer system supporting imaging including scanner, digital camera, and/or video camera.									
1.1.5 observe demonstrations or uses of specific-purpose electronic devices and adaptive assistive devices for special needs.									
1.1.6 observe demonstrations or uses of broadcast instruction, audio/video conferencing, and other distant learning applications.									
1.1.7 demonstrate knowledge of uses of computers and technology in business, industry, and society.									
1.2.1 use productivity tools for word processing, database management, and spreadsheet applications.									
1.2.2 apply productivity tools for creating basic multimedia presentations.									
1.2.3 use computer-based technologies including telecommunications to access information and enhance personal and professional productivity.									
1.2.4 use computers to support problem solving, data collection, information management, communications, presentations, and decision making.									
1.2.5 demonstrate knowledge of equity, ethics, legal, and human issues concerning use of computers and technology.									
1.2.6 identify computer and related technology resources for facilitating lifelong learning and emerging roles of the learner and the educator.									
1.3.1 explore, evaluate, and use computer/technology resources including applications, tools, educational software and associated documentation.									
1.3.2 describe current instructional principles, research, and appropriate assessment practices as related to the use of computers and technology resources.									
1.3.3 design, deliver, and assess student learning activities that integrate computers/technology for a variety of student grouping strategies and for diverse student populations.									
1.3.4 design student learning activities that foster equitable, e and legal use of technology by students.									
1.3.5 practice responsible, ethical and legal use of technology, information, and software resources.									

Convert Artifacts to PDF

- Create PDF files from word processing or slide show files (or any application)
- Use PDF Writer
- OR convert Postscript files with Acrobat Distiller (print to file)

Edit PDF Files in Exchange

- Edit Pages in Exchange
  - Insert pages
  - Extract pages
  - Replace pages
  - Delete pages
  - Move pages
  - Crop pages
  - Rotate pages
- Page Actions
  - Use forms
  - Add web links
  - Add multimedia objects
    - Sound
    - QuickTime movies
  - Notes
  - Navigation tools

Create Multimedia Files

- Digitize and edit sound clips
  - use sound editing software:
  Sound Companion
  Kaboom!

- Digitize and edit video clips
  - use video editing software:
  Movie Player Pro, Avid Cinema,
  Adobe Premiere, Apple's new Final Cut Pro

Navigation

- Organize portfolio with hypertext links between
  - Standards
  - Artifacts
  - reflections
- Create bookmarks & thumbnails
- Add movie links
- Insert sound clips
- Add “buttons” with Forms tool

Publish Portfolio

- Record to appropriate medium

  Floppy disk (no multimedia)
  CD-Recordable
  WWW server
  Video tape
  DVD (coming soon)

Remember the portfolio is a unique document...

...illustrating your achievements as an educator. It should:

- identify and reflect positively on relevant learning achievements
- critically analyze experiences and articulate the learning achieved
- demonstrate increased awareness of own potential and aspirations
- demonstrate improved self-confidence to develop own learning
- identify academic and professional development
- demonstrate skills, knowledge and understanding gain from coursework
- demonstrate skills, knowledge and understanding gain from the practicum
- demonstrate skills, knowledge and understanding gain from related professional work experiences
- critically reflect your thoughts and self assessment

- from UAA Adult Education Portfolio Handbook, 1998

Above all else:

Let your love of lifelong learning shine!

And have fun!

Helen C. Barrett, Ph.D.

- Web Site on Electronic Portfolios
  http://transition.alaska.edu/www/portfolios.html
  (soon) http://portfolios.alaska.edu/
- Listserv: el-port@uaa.alaska.edu
- E-mail: afhcb@uaa.alaska.edu