

Online Personal Learning Environments: Structuring Electronic Portfolios to Support Lifelong and Life Wide Learning

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Abstract: This paper outlines a new vision for “online personal learning environments” which may eventually replace what we currently call “electronic portfolios” in education. Based on the concept of “lifetime personal web space,” this online archive of a life’s collection of artifacts and memorabilia, both personal and professional, has the potential to change the current paradigm of electronic portfolios, mostly institution-bound, and focus instead on the individual or the family as the center for creating the digital archive, which can be used in a variety of contexts across the lifespan, from schools to universities to the workplace. A possible scenario is followed by the challenges faced when developing this service for widespread dissemination. This paper invites discussion of the theoretical foundation for a long-term research proposal, a proposed implementation plan and evaluation study.

It is intriguing to consider the notion that every person should be issued “Lifetime Personal Web Space” as proposed by Cohn & Hibbits (Educause Review, October 2004). Their focus was:

“Rather than limit people to the e-portfolio model, why not develop a model providing a personal Web space for everyone, for their lifetimes and beyond?”

“That every citizen, at birth, will be granted a cradle-to-grave, lifetime personal Web space that will enable connections among personal, educational, social, and business systems.”

They quote Vannevar Bush (1890–1974) in his now classic and prescient article “As We May Think” where his paradigm in 1945 was the existing microfilm technology:

Consider a future device for individual use, which is a sort of mechanized private file and library. It needs a name, and, to coin one at random, “memex” will do. A memex is a device in which an individual stores all his books, records, and communications, and which is mechanized so that it may be consulted with exceeding speed and flexibility. It is an enlarged intimate supplement to his memory.

The scenarios provided by Cohn & Hibbits mostly focus on “Educational Continuity: Less Knowledge Left Behind... a one-stop shop for electronic activities by housing and linking personal content libraries, work spaces, communication networks, and public areas... seamlessly link(ing) individuals to larger communities, thereby facilitating interpersonal connectivity versus fostering social isolation.” (This article was written just as FaceBook and MySpace were

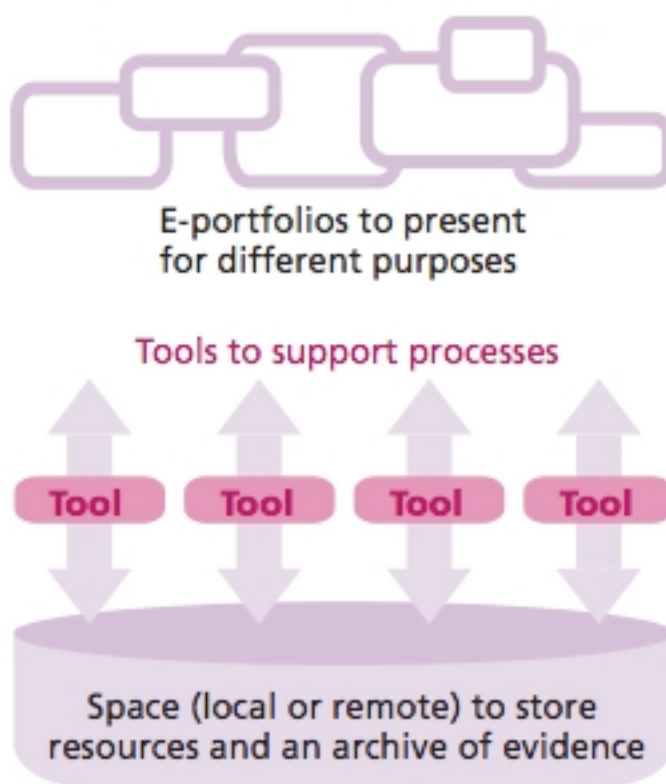
emerging). Their focus for this archive is “a life-long storage space that retains work products and their seminal versions, and a virtual exhibit of one’s evolving work.” The article was posted in Educause Review, which has a higher education audience.

They challenge the current “must-have mentality” of higher education for establishing electronic portfolio systems on campuses. Indeed, according to the Chronicle of Higher Education (2002), electronic portfolios are “the next big thing” in higher education. The challenge with many of these systems is that they are either proprietary or institution-centric, often disappearing when the student no longer subscribes or is enrolled in the institution. What happens when a student moves to another university? There is little interoperability between ePortfolio Management Systems, although there is a movement in Europe to establish interoperability guidelines, and the IMS has established ePortfolio standards, which most of the commercial ePortfolio vendors have ignored.

In her early work creating professional portfolios with *Women @ the Cutting Edge* (1997) in Melbourne, Australia, Elizabeth Hartnell-Young discussed the need to first develop a digital archive of professional artifacts that can be used in constructing a professional portfolio. This concept is further defined in the latest edition of her book on developing professional portfolios (2007). Dr. Hartnell-Young also led the team of researchers in the Learning Sciences Research Institute at The University of Nottingham that conducted [research project sponsored by Becta](#). This report presents the potential impact of e-portfolios on learning and teaching and is primarily aimed at policy-makers. The model on the right from their report identifies the three distinct components of an e-portfolio system: the digital archive (repository of evidence), tools to support different processes, and different presentation portfolios developed for different purposes and audiences.

Since the dawn of the Internet age, and the emergence of ePortfolio popularity since about 1999, K-12 schools have mostly ignored this technological innovation, primarily due to two reasons: lack of technology access in schools, and more emphasis on the accountability requirements of No Child Left Behind federal legislation. Now schools are beginning to reconsider the use of electronic portfolios, as the essential conditions are improving in schools due to e-Rate and EETT funding. However, there are still many visions and metaphors for the use of portfolios in all sectors of education. Some educators view portfolios as checklists of competencies, matching evidence to a long list of institution-centric learning requirements. Other educators view the portfolio as a tool for counseling

**Figure 1:
Components of an e-portfolio system**



students on future careers, or used as a tool for marketing a student to potential employers. Others see the portfolio as a space for reflection: "...a laboratory where students construct meaning from their accumulated experience" (Paulson & Paulson, 1991, p.5)

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

A portfolio is actually several different elements, depending on purpose and audience. A portfolio begins with a **collection** of a learner's work. From this collection, a learner **selects** certain pieces, depending on the purpose and audience, to go into a presentation format, and **reflects** on why that work was chosen (what is the meaning derived from choosing that artifact? "I chose this piece because..."). In an educational environment, one or more artifacts are often presented for evaluation (an assessment portfolio) for scoring (often using a rubric), hopefully with feedback provided by a teacher or peers so that a learner knows how/where to improve. In some cases, a student not only reflects on what they have learned, but also sets goals for future learning (**direction**).

In an electronic portfolio, that collection is often called a "digital archive." The learner selects their work by creating a hyperlink to work that is saved in that digital archive, and writes a reflection of that work. Some type of presentation/organization tool is used to organize the reflections and links to the artifacts, and share it electronically with the intended audience (peers, teachers, family, employers, etc.). When used for assessment, there is often a workflow management system that handles the institutional needs for data and/or accountability, and to facilitate the communication and feedback about the work.

With the current approach to electronic portfolios, the digital archive and the presentation tool are most often combined in a single system. When a student leaves the educational institution, that work remains, and is often purged when a student leaves. When ePortfolio management systems are institution-centered, they tend to be limited to the time that the students are enrolled, and the contents tend to be focused on academic goals. However, learning is lifelong and life wide. There is a need to separate the needs of the individual (for a personal learning space, to collect both the artifacts and a learner's reflections on their learning over time) and the institution (for data about student learning/achievement, and the presentation portfolios created for institution-determined purposes). The digital archive belongs to the learner, and should be under the control of the learner throughout their life. Each artifact should have a unique identifier, so that a learner can access their work for use in a variety of contexts. This digital archive should have the capacity for meta-tags, searching by keywords, date created, date changed, etc.

There is currently no predominant model for establishing a separate, learner-controlled digital archive of work unless an individual chooses to use one of the online storage systems, such as box.net. There are many different ePortfolio management systems, or presentation/organization tools (see the multiple versions of my online portfolio, where I have tried out many of these services, but all of my artifacts are actually links to documents stored on one of my online websites).

It is time to re-conceptualize the tools we use to organize our electronic portfolios: learners should have the lifetime personal web space to store their artifacts and reflections, with options for constructing their own views into their work (their story). Institutions can then provide their own versions of the presentation/assessment portfolio, allowing students an opportunity to link to files that are stored in their personal digital archives. This archive will outlive any short- or long-term enrollment in an educational program. The learner should have control and access throughout their lives.

The ownership of electronic portfolios needs to be re-conceptualized, as well. Learners own the work they create. Institutions own the teachers' evaluation of that work. Learners should be able to choose how much of that evaluation they will include in their own digital archive.

There is also a recent maturity in technology that has enormous impacts on the way we share what it means to be human in the digital age. More specifically, the widespread availability of high speed Internet in the homes in America (over 50% at the last report) has made the uploading and downloading of digital text/images/audio/video more feasible. The explosion of video sharing sites, such as YouTube, is evidence of this change, confirmed by Time Magazine, identifying "You" (anyone who uploads content to the Internet) as the 2006 "Person of the Year." The architecture of interaction, that is the foundation of Web 2.0, can also facilitate a pedagogy of interaction, through the use of those technologies to support interpersonal communication. There are also emerging technologies, such as Second Life, that create virtual environments that have untapped (and unresearched) potential for lifelong learning.

Below is a scenario for a lifelong, life wide approach to lifetime personal web space, electronic portfolios, online videos and digital stories.

Scenario (Use Cases)

A Lifelong, Life Wide approach

Families are the cornerstone of society and therefore should be the centerpiece of any record of human development. Every family could have a digital repository where they store all manner of digital records and memorabilia. This digital archive becomes the centerpiece of their storage of significant data about each family members' growth and development.

When a new child is born, a family opens up a new space in their online family webspace to begin storing the important digital artifacts of this new life (a folder? A new tag?). Of course, there are the first pictures and videos of this new life, often created by grandparents present, or shared with grandparents who live far away. Many parents today already establish websites to celebrate the arrival of a new family member. This webspace provides a place to both store and catalog the treasured digital photos that many parents/grandparents now collect of their children as they grow, marking milestones in development.

Once a child reaches school age, there are even more opportunities for collecting digital documentation of development, only now in partnership with the school. Children bring many treasures home from school, created as part of their school activities. What happens to most of

these artifacts? In many homes, they go into a box, stored for a future time when the importance will eventually fade, and they are often thrown out, or destroyed in the case of the rare fire or flood. Some teachers say that for some students, the work never leaves a student's backpack (parents don't know what to do with this work). Sometimes the favorite work takes up residence on the family's refrigerator door (the most ubiquitous portfolio container in the home?)!

Some schools begin portfolio collection activities in the early childhood years, collecting these artifacts and sharing them with parents during parent-teacher conferences. A young child can be taught to capture both artifacts and experiences with existing digital cameras, and upload them into an online space *if* the interface is appropriately easy to use. Simple metatags can be used to classify the documents. Young children can be helped through assistance by parents or by older students in their school (using "portfolio buddies" the same way we use "reading buddies").

As children mature, they can take responsibility for storing and organizing their own work; they can develop different views of this work for different purposes, such as student-led conferences with parents and teachers. In addition to work created with paper and pencil (text and images), students can also capture process, through audio and video artifacts. These artifacts provide an opportunity for including student voice in their work, both literally and rhetorically.

In this type of system, students engage in learning experiences that encourage them to produce artifacts that can be stored in the working portfolio. This process is interactive and reflective. It provides a rationale for using artifacts as evidence of learning. The artifacts become meaningful to the student as evidence of their own understanding and growth. At the same time, the teacher will evaluate each artifact, with the accompanying reflection, and decide if the artifact meets the guidelines of the performance task as outlined in the associated rubric. Student then receive feedback on their work so that they know what needs improvement. In addition, assessment data can be aggregated for reporting purposes. These two use cases can best be described as *portfolio as test* and *portfolio as story*. Paying equal attention to both approaches will result in a more balanced assessment system that supports learning.

At transition points, such as graduation from elementary school, middle school, or high school, a student might organize a summary document, with highlights from that educational experience, told in the students' own voice, in a format that incorporates the design creativity that is available on their social networking site. An important component of that transition portfolio would be setting personal and academic goals for the future. There is some research and curriculum developed for the Washington Office of Public Instruction (2007), that shows personal goal-setting can increase academic achievement. A modified version of a shared goal-setting environment, similar to "43 Things" might provide opportunities for student networking about their goals. The widespread use of blogs also provide the space where individuals can reflect on their growth over time.

Once students leave their secondary schools, and enter post-secondary institutions, or the job market, the digital archive, with various benchmark portfolio views, is stored under their control, for access "just in case" that work is needed in future educational or professional activities. Many universities are establishing their own online portfolio systems. A personal digital archive does not replace any customized system, as long as that system allows students to link to any individual document in their own archive. These customized systems are often established to

collect institutional data for assessment, accountability and accreditation. Having a separate personal archive, to which students can link, strengthens the difference between the needs of the institution and the needs of the individual.

Portfolios in the workplace are less well-defined. Some professions are known to support portfolio development, such as those that involve producing a product, pieces of artwork, websites, pieces of music, etc. Portfolios have been used to accredit adult self-directed learning. Portfolios can be used in personnel evaluation activities. Adult learners with a lifelong personal digital collection have the raw materials to pull together stories of their independent learning activities.

Now we have come full circle in the life cycle. When young adults establish their own families, this digital archive continues to grow, merging data together when a new family is formed. The digital archive can hold digital photos, important digital video clips, and audio recordings. From this repository, individuals have the resources to construct autobiographical “legacy” stories or personal histories about their lives, preserving these stories for future generations. Joe Lambert, of the Center for Digital Storytelling, has stated that in the future, creating digital stories of personal experiences will be the hobby of many people, especially as they reach retirement age [get exact quote]. The Association of Personal Historians has a mission of “saving lives, one story at a time.”

The Challenges

While this vision can be implemented today with existing technologies, the current systems available are disjointed, unconnected, with user interfaces that require a lot more technology skill than many users possess, especially if they are over 30 years of age. There is a need for a streamlined and developmentally appropriate user interface, as easy to use as a cell phone or a microwave oven, that will allow any intelligent person, from grade school on, to be able to manage their own files, with parents and older students helping younger children learn to manage the digital storage of their own work.

For this process to be accepted by schools, the issues of secure access needs to be addressed. Many schools today provide file storage for student school work, but that access is usually from inside the school’s firewall, and not accessible from a student’s home. A personal digital archive would be available from any Internet-connected device, including a cell phone, with appropriate safeguards, of course.

Another challenge is the quality of the artifacts that are posted online. Normally, online photo storage sites save images in much lower resolutions than the capabilities of most digital cameras today. Videos posted on most video sharing sites lack the quality of videos that are published on DVD. What are the acceptable tradeoffs between quality, document size and WWW accessibility? Until Internet 2 speeds are commonly available, this will be an issue, especially for full motion video and high quality images.

A bigger challenge will be socio-cultural, not technological: raising the awareness of various constituencies of the benefits of this service. One question may be, Why would I want to use this

type of service? Will it work? How much will it cost? Research needs to be conducted on multiple levels: usability of the system interface; cost-benefit analysis; efficacy in supporting teaching and learning; impact on student achievement in education; acceptance by employers for use in employment applications and/or personnel evaluations; acceptance by the public for storing their family memories/stories online. Pilot studies with multiple stakeholders will provide formative evaluation of these ideas, and allow the concepts to develop. “Let a thousand flowers bloom” and pick the ones that show the most promise!

The Research Project

At the time of SITE 2008, a Request for Participation will be prepared for small school districts in the Pacific Northwest to participate in this experimental design process, involving a lifelong, life wide approach to this new model of digital archive/electronic portfolios. A partnership with a major technology company is being negotiated, to support the online storage and applications necessary to collect and organize this information. The vision of this private-public partnership will be to find out what strategies work under what conditions to support the vision outlined above. A paper discussion will provide input into the research design and theoretical concepts presented here.

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