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ePortfolio for the Assessment of Learning

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1. Introducing the ePortfolio

An ePortfolio is an electronic portfolio of acquired learning – knowledge, skills and abilities acquired through formal, non-formal, informal, accidental and incidental learning. The ePortfolio is currently defined as “a collection of authentic and diverse evidence, drawn from a larger archive representing what a person or organization has learned over time on which the person or organization has reflected, and designed for presentation to one or more audiences for a particular rhetorical purpose” (National Learning Infrastructure Initiative, 2003). The term ePortfolio, then, is shorthand for two items – the digital archive and the presentation drawn from it for different purposes. One of those purposes may be the assessment of learning, e.g., assessment of student achievement by teachers and/or self-assessment of progress and changes in Knowledge, Skills and Abilities (KSA).

The ePortfolio is about both process and product. ePortfolio tools – with interventions by teachers or mentors - help creators / users to identify and reflect on the outcomes of learning experiences. Creators can be individuals, organizations, even businesses –

and they can be the receivers / processors as well. In the context of adult literacy, the Portfolio has the capacity to be a learning tool, an assessment tool, and a record of achievement. It is inherently motivational in that it focuses on what the person can do, rather than what they can't, as measured by standardized tests. In fact, portfolio assessment and portfolio learning are common practice in primary literacy education, and in adult literacy and basic education programs. For example, in Cape Breton, adult learners and their tutors use a paper-based process to demonstrate learning.¹ To portfolio assessment, the ePortfolio adds the electronic dimension that enhances the storage size and updating capabilities of a paper-based portfolio.

FuturEd Consulting Education Futurists Inc. has studied and promoted the ePortfolio since 1996. FuturEd research demonstrates that the ePortfolio is linked closely with:

- Human resources development and Human Capital Management – as the means of identifying and managing what a person and a group of persons knows and can do;
- lifelong learning – as the method of tracking and recognizing ongoing learning, as an incentive to the lifelong learning requirement;
- Prior Learning Assessment – as the outcome of the PLA process of exploring and determining an individual's non-formal and informal learning;
- education and training at all levels (K-12, PSE and workplace) - as a teaching tool (reflection as a basis for learning), as a learning management tool (e.g., project-based learning) and as an alternative form of learning assessment;
- eLearning – as a type of Knowledge Management, a part of a Student Information System and a potential form of “Usable Learning Object” repository;
- learning organizations – as a means of tracking and developing human capital and assisting professional development of employees within organizations across sectors;
- community economic development – as an inventory of collective community human capital assets;
- future learning systems that rely less on credentials and more on competencies;
- and

¹ Available at <http://www.nald.ca/cbln/projects/dsuccess/dsuccess.pdf>

- ePortfolio systems of “producers” and “consumers” to enhance return on investment for users.

This brief paper focuses on one of the important uses of an ePortfolio – technology-assisted assessment of learning.

2. ePortfolio Assessment of Learning

There are various means to assess and record a person’s acquired learning, e.g., test results and report cards in school, performance appraisals at work, personal journals. The ePortfolio may be newest form of recording learning, but portfolio assessment has been used for a very long time. Hence, the electronic portfolio can make portfolio assessment more effective and efficient.

2.1. ePortfolio Assessment of Learning

A ePortfolio provides both evidence of a person’s learning and the individual’s reflection of his/her own work. It is a record of learning, growth and change; and it provides meaningful documentation of individual abilities. An ePortfolio is an ever-evolving organic creation. In the academic environment, examples of types of portfolios include:

- ◆ developmental portfolio: documents a student’s improvements in a subject area over a school year; contains samples of the student’s work along with self-evaluations of specific assignments; provides documentation which can be used for student evaluations and parent conferences;
- ◆ teacher planning: using an existing portfolio system (e.g., commercial, on-line) to receive information about an incoming class of students;
- ◆ proficiency portfolio: used as a means for determining graduation/completion eligibility, e.g., requiring students to complete portfolios in certain areas;
- ◆ showcase portfolio: documents a student’s best work accomplished during an entire educational career, e.g., research papers, art work, and science experiments which best represent the student’s skills and abilities;
- ◆ employment skills: a student portfolio used by employers to evaluate prospective employee’s work readiness skills, e.g., employability skills portfolios created by students in Michigan public skills; and
- ◆ college admission portfolio: a student portfolio, usually a showcase portfolio, used to determine eligibility for admission to college, university.

Portfolio assessment combines many innovations in the appropriate assessment of learning, i.e., alternative assessment, authentic assessment, competency-based assessment, flexible assessment, and standards-based assessment.

- Alternative assessment refers to alternative means of enhancing educational assessment through, e.g., confidence measurement, analysis of self-awareness, and performance evaluation.²
- Authentic assessment involves examining students' basic skills, control of information, high level of understanding, personal characteristics, and habits of mind;³ and allows students to participate actively in their own learning.⁴
- Competency-based assessment is the assessment of competence against standards set for knowledge and skills in a particular area, typically used in vocational education and professional certification processes.
- Flexible assessment can include checklists, portfolios, performance tasks, product assessments, projects and simulations; observation of the learner, questioning, oral or written tests and essays, projects undertaken in groups or individually, role playing, work samples, computer-based assessment; and flexible assessment is intended to suit the learner's pace and style of learning and assess the individual when s/he is ready.
- Standards-based assessment is intended to measure achievements against stated learning outcomes or objectives.

Combining elements of all these, portfolio assessment involves using the products in a portfolio as the evidence of learning for assessment purposes.

Portfolio approaches to literacy assessment have been used throughout the 1990s, and they are relatively well-documented.⁵ A literacy portfolio is a systematic collection of a variety of teacher observations and student products, collected over time, that reflect a student's developmental status and progress made in literacy. In some cases, teachers

² Improving Educational Assessment by Incorporating Confidence Measurement, Analysis of Self-Awareness, and Performance Evaluation: The Computer-based Alternative Assessment Project (Paul, 1998) at <http://www.jodypaul.com/ASSESS/>

³ Portfolio Assessment and the New Paradigm: New Instruments and New Places (Engel, 1994) on the ERIC website at http://www.indiana.edu/~eric_rec/ieo/bibs/portfoli.html

⁴ Becoming Reflective Students and Teachers with Portfolios and Authentic Assessment (Paris and Ayres, 1994) on the ERIC web site at http://www.indiana.edu/~eric_rec/ieo/bibs/portfoli.html

⁵ See, for example, *Portfolio Assessment* at <http://www.eduplace.com/rdg/res/literacy/assess6.html>

are expected to set standards or expectations in order to then determine a student's developmental level in relation to those standards. Portfolio assessment, as it has developed in the literacy field, is considered to be a promising approach to validity in assessment: consequences, fairness, transfer and generalizability, cognitive complexity, content quality, content coverage, meaningfulness and cost efficiency.

Types of portfolios used for academic assessment purposes include, e.g., the reflection portfolio, literacy portfolio, process portfolio, student reading portfolio, showcase portfolio, exit portfolio.⁶ In the educational environment, uses of portfolio assessment include:

1. in pre-service teacher training,
 - to open the way for students to construct alternative conceptions of teaching,⁷
 - to think reflectively about experiences in a community service-learning program,⁸
 - to bridge "personal and professional funds of knowledge;"⁹
2. in K-12 classrooms:
 - to assess student learning,¹⁰
 - to achieve educational outcomes other than acquiring content knowledge and performing well on standardized multiple-choice tests, e.g., the ability to formulate statements about personal beliefs and values, goals and aspirations,¹¹
 - for students to communicate the story of their learning to their parents,¹²
 - as the basis for reformed parent-teacher conferences,¹³
 - to shift some of the responsibility for assessment from the teacher to the student,¹⁴
 - to the advantage of special education students, e.g., in displaying authentic tasks;¹⁵

⁶ *Like Portfolios for Assessment* (Katz and Johnson-Kuby, 1996) on the ERIC web site at http://www.indiana.edu/~eric_rec/ieo/bibs/portfoli.html

⁷ *The Role of Portfolio Evaluation in Social Studies Teacher Education* (Ross, 1996) on the ERIC web site at http://www.indiana.edu/~eric_rec/ieo/bibs/portfoli.html

⁸ *Portfolios: A Tool for Reflective Thinking in Teacher Education* (Wade and Yarbrough, 1996) on the ERIC web site at http://www.indiana.edu/~eric_rec/ieo/bibs/portfoli.html

⁹ *Portfolios: A Pedagogy of Possibility in Teacher Education* (Freidus, 1996) on the ERIC web site at http://www.indiana.edu/~eric_rec/ieo/bibs/portfoli.html

¹⁰ *Portfolio Assessment: Some Questions, Some Answers, Some Recommendations* (Gillespie, et al., 1996) on the ERIC web site at http://www.indiana.edu/~eric_rec/ieo/bibs/portfoli.html

¹¹ *Student Reflection in Portfolio Assessment* (Wolfe, 1996) on the ERIC web site at http://www.indiana.edu/~eric_rec/ieo/bibs/portfoli.html

¹² *The Power of Portfolios* (Hebert and Schultz, 1996) on the ERIC web site at http://www.indiana.edu/~eric_rec/ieo/bibs/portfoli.html

¹³ *When Students Lead Parent-Teacher Conferences* (LeCountryman and Schroeder, 1996) on the ERIC web site at http://www.indiana.edu/~eric_rec/ieo/bibs/portfoli.html

¹⁴ *Writing Portfolios: Turning the House into a Home* (Raines, 1996) on the ERIC web site at http://www.indiana.edu/~eric_rec/ieo/bibs/portfoli.html

- in literacy programs, to assess reading in early primary grades.¹⁶

In the adult education and workplace environment, portfolio assessment falls within the rubric of Prior Learning Assessment and Recognition. While it is not used to any extent in the workplace environment, how PLA/PLAR is used in post-secondary education for placement and advanced credit purposes in Canada,¹⁷ and elsewhere,¹⁸ is well-documented and relatively advanced.

The advantages to a portfolio for assessment purposes are asserted to be that (1) they provide a wealth of information upon which to base instructional decisions; (2) they are an effective means of communicating students' developmental status and progress; (3) they can serve to motivate students and promote student self-assessment and self-understanding; and (4) they contextualize assessment and provide a basis for challenging formal test results based on testing that is not authentic or reliable, e.g., a single test core. Portfolio assessment is advanced to the stage that an *Electronic Portfolio Assessment Tool* is available online.¹⁹

In terms of portfolio assessment, the single greatest concern has been validation or verification of the evidence presented, and this has considerable implications for the development of learning records. A learning record, whether electronic or not, has severely limited utility if the claims of skills and knowledge cannot be verified.

Credentials are relatively easy to verify; and credentials have, in the past, served as a short-hand method of displaying skills and knowledge. The issue of "integrity" of a

¹⁵ Portfolio Assessment and Special Education Students (Wesson and King, 1996) on the ERIC web site at http://www.indiana.edu/~eric_rec/ieo/bibs/portfoli.html

¹⁶ Research Findings on the Use of Portfolio Assessment in a Literature Based Reading Program (Homes and Morrison, 1995) on the ERIC web site at http://www.indiana.edu/~eric_rec/ieo/bibs/portfoli.html

¹⁷ See for example:

- ◆ <http://www.ctt.bc.ca/PLA/>
- ◆ aix4.bcit.bc.ca/~presoff/4104.htm
- ◆ <http://www.extension.usask.ca/PLAR/defins.html>
- ◆ wysiwyg://617/http://node.on.ca/tfl/plar/
- ◆ <http://www.plar.com/>

¹⁸ See, for example:

- ◆ for Australia, <http://www.edna.edu.au/edna/owa/>
- ◆ for the US, <http://www.cwv.edu/saell/pla/> and <http://www.apec-hurdit.org/lifelong-learning-book/mann.htm>

¹⁹ Available at <http://www.seamonkey.ed.asu.edu/~vito/icme.html>.

learning record leads to both the type of evidence to gather and means by which to validate evidence in a concise and reliable fashion.

2.2. Sample ePortfolio Tools and Services

Currently, there are a number of ePortfolio tools and services that can be used for the assessment of learning. They include, for example:

- Avenet's efolio²⁰ is a Web-based portfolio management system that enables students, professionals, educators and others to organize, manage and display career and educational information to advance educational and career objectives. Membership in the Learning Innovations Forum d'Innovations d'Apprentissage (LifIA)²¹ includes access to a career ePortfolio through Avenet, and FuturEd will be conducting research on this international ePortfolio initiative²² as it relates to the ePortfolio 2010 initiative.
- Chalk and Wire²³ is a Canadian ePortfolio service with applicability in the workplace. Says Geoff Irvine from Chalk and Wire, "Companies with a strong training ethic and commitment to employee growth both through company derived training opportunities, and those generated by "self-starter" employees seeking to improve their skills, could easily use the tools. The employees do not have to know anything about technology to develop their portfolio, so there is little or no learning curve and lost productive time. They can have many portfolios of any look and feel they choose for different contexts: performance reviews, promotion interviews, job searches. On the HR administration / leadership side, the assessment tools allow the aggregation and disaggregation of professional development data across the organization in a few clicks. Patterns in professional growth and weaknesses in professional practice within the organization are quickly made obvious causing performance differences and move to target and fill the gaps. There is also a full survey tool that allows them to query employees at anytime."

²⁰ Complete information is available at <http://avenetefolio.com/>

²¹ Go to www.lif-fia.org for membership information.

²² See the press release at http://avenetefolio.com/index.asp?Type=B_PR&SEC={6D124B20-C790-4A0A-8FBC-0A7927A450BC}&DE={2A8D84FA-A089-4DD3-9203-EC70C400AF6F}

²³ Complete information is available at <http://www.chalkandwire.com/eportfolio/>

- Epsilon Portfolios²⁴ is a comprehensive Electronic Portfolios Management System designed and developed at the Indiana University UPUI CyberLab. Epsilon Portfolios offers a Web environment for students, faculty, alumni, and professional individuals to build personal portfolios. While it is designed for the academic environment, it is adaptable to the workplace.
- Nuventive's iWebfolio is a flexible, Web-based personalized portfolio with the power to store and present a lifetime's worth of experience. Individuals can use iWebfolio to easily create an unlimited number of customized portfolios for school, job applications, or any use imaginable, while controlling who sees specific portfolio information. Because iWebfolio is viewable with any standard browser, authorized users can access portfolios anytime, anywhere in the world. Membership in the European Institute for eLearning includes access to the Nuventive iWebfolio.²⁵
- Folio by ePortaro²⁶ is an enterprise level electronic portfolio software system. Designed to support reflection, growth, accomplishment and collaboration, the ePortfolio system enables portfolio owners to demonstrate their skills, competencies, personality and mastery to third parties. It fully supports multiple languages in a single installation; and has partners in Europe to help with that.

Some education systems choose to purchase one of these tools, other attempt to develop their own. Guidance on the process of informed choice and quality indicators is available on the FuturEd website.

2.3. Historical Context

In 1996 and 1999 literature reviews,²⁷ Barker located a variety of learning records in Canada, the US, and elsewhere. For example,

- in the adult literacy field in Ontario, the Literacy Link was piloting RALS (Recognition of Adult Learning System) and a "smart card," which looks like a bank card whereby all the learner's skills and training are listed.²⁸

²⁴ Complete information is available at <http://www.epsilon.com/>

²⁵ Go to www.eife-l.org for membership information.

²⁶ Complete information is available at <http://www.eportaro.com>

²⁷ By FuturEd for the CLFDB in 1996

²⁸ Source is Sarah Maloney, WVEBS Coordinator of Literacy Link Eastern Ontario.

- The Sectoral Skills Council had developed *Exploring Careers Guidebook* which directs individuals to questions regarding their skills, qualifications, strengths, needs, and preferences. It was essentially a form of portfolio development and career planning.
- Using the Conference Board's Employability Skills Profile as a basis, portfolio applications included an *Employability Skills Student Portfolio* with a booklet, storage folders and a binder for \$20 as well as an *Instructor's Guide* with computer diskette for \$30, developed for use in schools by Nelson Canada in partnership with the Calgary Educational Partnership; and *ESP*, an Employability Skills Portfolio developed by OISE (Ontario Institute for Studies in Education) Guidance Centre which included some really valuable suggestions for examples of "evidence" to assemble in a portfolio.
- The Royal College of Physicians and Surgeons of Canada had a program called the Maintenance of Competence Program (MOCOMP) to help medical specialists track how they remained current in their knowledge and skills through both group and self-directed learning, philosophically based on D.A. Schon's *Educating the Reflective Practitioner* (Jossey-Bass, 1990). Doctors were enabled to maintain a PC Diary to record learning used in practice under the headings of knowledge, skills, attitudes;²⁹ and they could use the diary as a source for self-accredited group programs and self-directed learning portfolios.
- The California Learning Record³⁰ was used with grades K-12. It is a descriptive instrument designed to record the progress of students in grade school in the areas of listening, speaking, reading and writing. A data collection instrument on which teachers may record observations accompanies the Record and prompts teachers to comment on the social contexts of interaction, strategies the student uses, etc. The CLR is based on the Primary Language Record developed in London in the mid-1980s. An entire assessment system has been developed. The CLR Assessment System³¹ is standards-referenced, i.e., it requires analysis of a pattern of performance observed and documented over time in natural settings.

²⁹ Both MOCOMP and PCDiary are copyrighted products. Both service as excellent models for process and development.

³⁰ Information on the California Learning Record is available at <http://www.ericae.net/eac/eac0060.htm>

³¹ Information on the CLRAS is available at <http://www.cwrl.utexas.edu/~syverson/olr/clrsystem.html>

- Faculty at Dalhousie University had access to *Recording Teaching Accomplishment: A Dalhousie Guide to the Teaching Dossier* which outlines a process and a product (dossier) that focuses heavily on the accumulation of evidence of achievement of student learning.
- At the University of Guelph, the Counselling and Student Resource Centre was piloting a project called *Taking Charge* to help students track their progress toward the eleven learning objectives established by that university in 1992-93. Students receive a 3-ring binder for this purpose, and faculty are encouraged and helped through workshops to support its use.

3. The Future of ePortfolio Assessment

There is a trend towards technology-assisted assessment of learning at all levels of learning systems. Areas of interest to watch include:

- ePortfolio for Formative Assessment (a specific purpose)
- ePortfolio and Reflective Learning (assessment of one type of learning)
- ePortfolio as a transition tool (between grade levels)
- Assessment of learning across subject matter silos
- Self-assessment of learning
- Assessment of lifelong learning

FuturEd is deeply concerned that there be collaboration between and among ePortfolio developments in order that this learning innovation achieves its potential for improving learning systems and promoting lifelong learning.