ePortfolio:
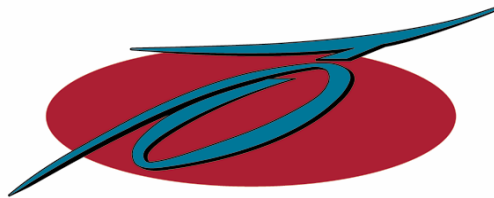# A Tool for Quality Assurance

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In the education and training community, an ePortfolio is understood to be an electronic portfolio or record of learning acquired from all learning environments – a digitally created and managed archive of acquired skills and knowledge. How, you may ask, is an ePortfolio used for Quality Assurance?

A clue to the answer lies in the more formal definition of ePortfolio - "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"[1]. In the context of Quality Assurance (QA), the purpose is to examine the quality of learning; for example, teachers will assess the quality of student learning using an ePortfolio. If the purpose is to examine the quality of a product or service (P/S), it is the organization behind that P/S that undertakes a process of examining, and learning about, the quality of the P/S. Typically, this examination is called evaluation. It is in this sense, then, that an ePortfolio can be used for QA.

In this paper, we begin by taking a general look at how the ePortfolio is currently understood and used. Then we examine how an ePortfolio is used specifically for QA of learning, eLearning, even at the process of ensuring quality of an ePortfolio.

ePortfolio Overview

The label "ePortfolio" is a shorthand term for both a process and a product. ePortfolio tools help creators through the process of identifying and reflecting on the outcomes of learning experiences, then creating digital evidence of that learning. The product, as stated earlier, is a purpose-driven presentation taken from that body of digital evidence. The term "learning" is used as shorthand for "a body of acquired skills, knowledge and abilities (SKA) resident in either an individual or a community."   Learning implies change, i.e., an increase in skill levels and knowledge. The term "digital" is used to imply the use of a computer, particular software or electronic tools, and, often, the Internet.

There are three basic types of ePortfolios – standards-based, showcase, and social networking – with a lot of variations based on purpose. In the education environment, students generate and use ePortfolios for all three purposes – to demonstrate achievement against intended learning outcomes for assessment by teachers, to showcase best work such as papers and artwork, and to share ideas and work with peers, parents and others in their social network.   For example, in British Columbia, ePortfolios are used by secondary school students to demonstrate and showcase competencies outside the academic

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[1]   As defined by the National Learning Infrastructure Initiative (2003).

curriculum, including the competencies required for active citizenship.[2] At the Simon Fraser University, students submit their work in a subject-specific ePortfolio to professors for assessment of the quality of their achievements. Around the world, students of all ages create a digital identity on the Internet and create virtual communities. ePortfolio tools help creators to identify and reflect on the outcomes of learning experiences, to produce archives and presentations, made particularly appealing through use of multi-media, e.g., audio files to demonstrate language or musical competence, video files to demonstrate skills such as welding, social networking and blogging to establish references. At it's most simple, an ePortfolio may resemble a personal homepage or an electronic resume, and at its most complex, it may become a person's digital identity.

Looking at the history of the ePortfolio, as sweeping generalizations, it has been used in:
- primary and secondary education as a tool for demonstration of learning;
- in higher and post-secondary education for the assessment of learning;
- lifelong learning to enable continuous "reflective" learning and to inventory all types of learning;
- the workplace for the recognition of work experience and workplace training, for recruitment and targeted training, and for career advancement; and
- organizational and/ or economic development through asset mapping and quality assurance.

An ePortfolio can be created and used by individuals, communities and/or organizations to (1) archive and share learning and culture acquired from informal, non-formal and formal learning environments; (2) provide evidence or verification of learning in a dynamic, multimedia fashion; (3) manage personal and collective learning to maximize usage and to plan; and (4) showcase or promote particular assets as required.

FuturEd has studied and promoted the ePortfolio since 1996.[3] FuturEd research demonstrates that the ePortfolio is linked closely with:
- human resources development and **Human Capital Management**[4] – as the means of identifying and managing what a person and a group of persons knows and can do;
- **lifelong learning**[5] – as the method of tracking and recognizing ongoing learning, as an incentive to the lifelong learning requirement;
- **Prior Learning Assessment**[6] – 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**[7] (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); as an

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[2] For more information on this initiative, please see http://www.bced.gov.bc.ca/graduation/portfolio/welcome.htm.
[3] Digital Learning Record (ePortfolio) Background Paper (Barker, 1996).
[4] The ePortfolio and Human Capital Accounting FuturEd White Paper(Barker, 2003)
[5] The ePortfolio and HRD Policy Goals FuturEd While Paper (Barker, 2003)
[6] The Electronic Learning Record: Assessment of Skills and Knowledge (Barker, 1999)

alternative form of learning assessment; and as a tool for transparency and trust between institutions and nations;[8]

- **eLearning** – as a type of Knowledge Management, a part of a Student Information System and a potential form of "Usable Learned Object"[9] repository;

- **learning organizations**[10] – as a means of tracking and developing human and capital assets; assisting professional development of employees within organizations across sectors; assessing and demonstrating continuous improvement and quality;

- **community economic development**[11] – as an inventory of collective community human capital assets;

- **future learning systems**[12] that rely less on credentials and more on competencies;

- **cultural archiving**, through digital storytelling, of traditional and indigenous wisdom, particularly for First Nations and Aboriginal youth, elders and communities;[13] and

- **organizational accountability**[14] **–** as a transparent tools for setting out achievements against standards for excellence for quality assurance;

- **social networking** and **social capital development** [15]through the development and use virtual communities;

- **return on investment in eLearning**[16] – examining the tangible and intangible ePortfolio costs and benefits, the intended and unintended outcomes;

- **digital identity** and the creation of secure, private digital archives for all citizens.[17]

From all this study and advocacy, from research,[18] an international project to create quality standards,[19] and tools created,[20] FuturEd has concluded that the term "ePortfolio" is used to encompass (1) tools, products and systems that can be used by (2) individuals, educators, employers and entire nations for the purposes of (3) describing, assessing, recognizing and using knowledge and skills acquired (4) through all forms of learning – informal, formal, non-formal, accidental and incidental (5) with evidence that is digitally created, stored and managed through (6) practices that meet standards assure transportability, usability, and security.

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7 ePortfolio for the Assessment of Learning FuturEd White Paper (Barker, 2005)
8 ePortfolio and eLearning Quality Standards: Tools for Trust, Transparency and Transportability at VUSCC (Barker presentation to the Commonwealth of Learning, 2006)
9 Building on the concept or Reusable Learning Object, this shifts the focus to the learner, i.e. the impact of learning.
10 Introducing the ePortfolio: The New Management of Learning (Barker presentation, 2004)
11 Community ePortfolio for Community Economic Development (Barker, 2003)
12 The Future of the ePortfolio, the Future With the ePortfolio (Barker presentation, 2005)
13 The Canadian eParfleche Project: ePortfolio for Aboriginal Communities (Barker presentation, 2004)
14 ePortfolio for eLearning Quality Assurance (Barker presentation, 2005)
15 Environmental Scan: ePortfolio in General and in the Workplace Specifically (Barker, 2006)
16 Return on Investment in eLearning: Discussion and ROI Tool (Barker, 2005)
17 ePortfolio in 2006: A Call to Action (Barker, 2006)
18 Assessment and Management of Learning: ePortfolio Research Report (Barker, 2000)
19 ePortfolio Quality Standards Discussion Paper (Barker 2003) and ePortfolio Quality Standards (FuturEd, 2004)
20 Consumers Guide to ePortfolio Tools and Services (FuturEd, 2004)

ePortfolio tools have been developed from very different perspectives and applications, for example:

- digital storytelling tools to record changes, achievements and cultural artifacts by children, families and communities;
- learning assessment tools to demonstrate expected learning outcomes by students of all ages;
- digital inventory tools to assemble and display capabilities, with supporting evidence, by artists, athletes, businesses, agencies or communities;
- reflective learning tools to promote and support individualized learning through the thoughtful examination of experience;
- electronic tools for authentic assessment of learning in non-academic areas, workplace experience or informal training;
- management tools for student information systems and knowledge management systems;
- cultural archiving and media exploration by Aboriginal communities;
- quality assurance tools for comparison of product quality to standards of excellence or professional standards of accreditation.

Until recently, ePortfolio tools focused largely on the presentation of information, with an archive of digital data that derived from the associated purpose of the presentation, i.e., the archive was created with the purpose in mind. However, new ePortfolio tools include digital environments for assembling and managing documents and all forms of media in a digital archive, and/or software applications for assembling and sorting portions of that archive for a particular purpose, e.g., applying for a job or seeking course credit. In the future, the archives will come first, with ePortfolios created when and as needed.

Teachers, trainers and HR specialists have been using both portfolios and eLearning for some time. Quite naturally, the electronic portfolio – ePortfolio- is a combination of the two, but it introduces unique advantages. First, the "e" provides an opportunity for mediated evidence of competencies in the archive – digital audio, video, artifacts and hyperlinks. It is a living document that individuals can add to or modify on a regular and immediate basis, in creative and highly sensory ways.   A second advantage is the incorporation of reflective learning. An ePortfolio embodies both the process of reflecting on learning experiences and the product of verifying claimed learning outcomes. The ePortfolio tool is a semi-structured framework for reflective learning in that it goes well beyond filling in blanks in a database like the conventional resume form. A third advantage is that the same tool can be used by individuals, businesses, organization and/or communities – real or virtual. Each will use the same processes of collection, selection, reflection, projection and presentation;[21] and their purposes may be relatively the same: the self-examination and communication of knowledge and learning assets. The fourth advantage is the focus on learning – actual competencies, rather than credentials that serve as a questionable proxy for competencies.

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[21]   For more information, see http://www.helenbarrett.com/ALI/intro.pdf

Although we typically think of ePortfolio creators as individuals, ePortfolios can be created and utilized to advantage by groups of people. For example, ePortfolios can be used by:

- businesses and agencies, as a means of tracking and developing collective human capital and assisting professional development of employees within organizations across sectors;
- communities, either virtual or real, as an inventory of collective community human capital assets for, e.g., community economic / social development;
- cultural groups, as digital storytelling for cultural archiving of traditional and indigenous wisdom;
- enterprises, as a means of assessing and demonstrating quality of products and services in a standards-based and transparent fashion.

Both individuals and communities of all type can use an ePortfolio to archive learning acquired from all forms of learning in an inclusive, objective manner; provide evidence or verification of learning in a dynamic, multimedia fashion; manage human and social capital assets for and by themselves to maximize usage of acquired learning and perhaps conduct gap analysis to target required assets; and showcase or promote particular assets as required. One of the many, many uses of ePortfolio, then, is for quality assurance.

Quality Assurance Overview

There are as many views of Quality Assurance as there are uses for ePortfolios. Quality is defined in countless ways, but a simple definition is "satisfaction that the product or service is effective and efficient for intended purpose and audience." Both producers and consumers want quality, but each may define it differently.

From the field of evaluation, a number of traditional approaches to quality assurance are used. Some approaches, such as the ISO quality system, focus on the assessment of process. Others, such as the Good Housekeeping Seal of Approval or the eQcheck eLearning quality mark, focus on product. As well there is variety in the methods used: internal assessment, self-assessment, external review, peer review, expert judgment. Assessment or evaluation can be for formative or summative purposes, with timing that reflects the opportunity to make changes or improvements.   And evaluation can take a variety of forms: Return on Investment or Cost/Benefit analysis, impact analysis, standards-based assessment. The latter is the process of judging against internal objectives, comparable products or services, and/or standards of excellence. Both producers and consumers want to know the outcomes of a formal evaluation or quality assurance assessment; however, the outcomes are not always shared.

New views of quality assurance reflect some changes in thinking about timing, perspective, purpose of evaluation or quality assessment. For example, while in the traditional view of quality assurance, the

conclusions were what was important, in the new view, the process of evaluation is as important, perhaps more important. In the emerging view of quality assurance, the needs of the consumer not only take precedence, but the consumer is involved in the assessment process, in a fashion that Alvin and Heidi Toffler[22] call "prosumption." Customers are involved in the process of decision-making about the development of the product/service and in continuous improvement, helping to ensure quality in an iterative, engaged fashion. The new purposes of Quality Assurance, then, are related less to formative or summative judgement, and more to organizational learning. Learning means changing, adapting, acquiring new survival skills and knowledge; and as KBE organizations need to be continuously learning, they require new forms of QA, such as TQM, to contribute to that. Inside the organization, they need to manage human capital assets and to ensure return on assets, human and/or capital. New forms of QA aim to study and assure these organizational goals.

The ePortfolio fits well into the emerging views of Quality Assurance.   The ePortfolio processes include (1) creating an inventory or description of the product or service under review, (2) reflection on aspects of change, improvement and quality, and (3) providing evidence to support quality assertions. The strengths of the ePortfolio processes are that they are:

- a form of organizational learning through self-assessment and reflection;
- collaborative, inviting peer review and prosumption;
- iterative and encouraging of continuous improvement;
- collaborative thereby combining internal and external assessment;
- transparent in that quality claims are supported with digital evidence;

The ePortfolio product – a purpose-driven electronic document – supports both internal QA and external evidence of quality and quality assurance. It is user friendly and appealing, of great and immediate utility, endlessly scalable, an elegant use of inelegant technologies. As a process, it is standards-based, iterative, transparent, and constructive. Digital tools reduce volumes of time and paper, are easily shared and modified.

Most importantly, an ePortfolio helps to solve the quality paradox that "providers of goods and services must assure quality but they can't provide quality assurance." Quality assurance must be objective, professional, credible, recognized, iterative and continuous. These are the attributes of the ePortfolio. It takes a team to provide quality assurance – both producer and consumer perspectives; expertise in evaluation, learning and technology. The ePortfolio engages team members in setting quality standards as an ePortfolio framework; assessing a product or service against those quality standards through reflection and presumption; and providing evidence to support assertions of quality.

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[22] Toffler, A and H. Toffler. (2006) *Revolutionary Wealth*.   New York: Alfred A. Knopf.

ePortfolio for Quality Assurance

Although there different types of ePortfolio, for quality assurance purposes, the standards-based ePortfolio makes most sense. For an ePortfolio to be used for quality assurance in an effective and efficient fashion, an ePortfolio "system" may be required. An ePortfolio without someone to receive, process and/or utilize it is like one hand clapping.

The components of the FuturEd ePortfolio System are **producers, consumers** and **ICT** (Information and Communication Technologies). In a small number of cases, the producer and consumer may be the same person but the functions remain the same. In all cases, a computer is used for creating and using the ePortfolio in the critical "matching" process; often this involves using the Internet as well.
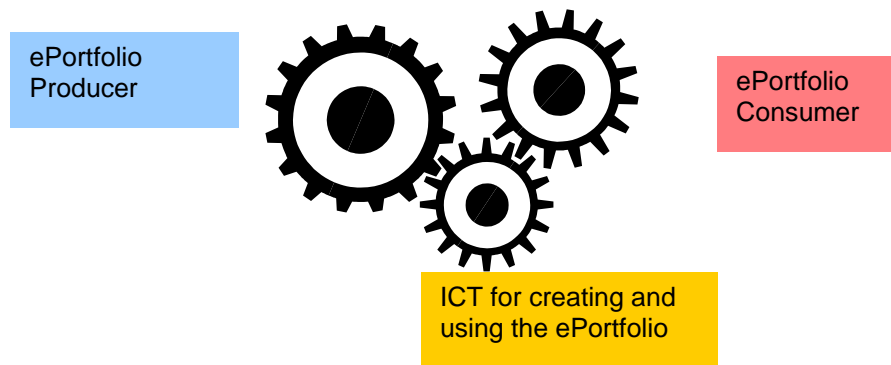
In the context of Quality Assurance, the ePortfolio consumers set the standards which become the framework for the ePortfolio. The consumers may be certifying bodies, credentialing bodies, purchasers and decision-makers who have established expectations of quality. The ePortfolio producers are the individuals or groups who create or generate the ePortfolios by assessing their product or service against the stated quality expectations or standards, and providing digital evidence in support of quality assertions. In the ePortfolio consumption process, a person or agency exams the quality claims and actual evidence against the expected standards for a positive match.

- Educators examine student achievements against stated learning outcomes.
- Accrediting bodies examine applicants for requisite professional competencies.
- Employers examine applicants for job fit and suitability.
- Certifying bodies examine products and services for acceptability and excellence.

In this case, computers can do what they do best – digitally matching stated requirements with stated achievements. The entire development and utilization of the ePortfolio is made effective, efficient, and electronic through the use of ICT: computer-based and web-based ePortfolio creation tools for producers; web-based sets of quality standards for both producers and consumers; and computer-based

or web-based ePortfolio processor tools for consumers to receive and process individual ePortfolios. This approach can be applied wherever standards of excellence exist; however, to date, no such 3-part tools actually exist. People, rather than computers, undertake the assessment for suitability, i.e., the matching process.

Learning Quality

In formal education and training, at all levels, the ePortfolio is now used for the assessment of learning, i.e., to judge the quality of learning against intended learning outcomes or learning standards. Has the student achieved the intended learning outcomes? What is the evidence?

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.[23]

- Authentic assessment involves examining students' basic skills, control of information, high level of understanding, personal characteristics, and habits of mind;[24] and allows students to participate actively in their own learning.[25]

- 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.

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[23] 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/

[24] 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

[25] 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

Combining elements of all these, portfolio assessment involves using the products in a portfolio as the evidence of learning for assessment purposes.[26] This is the most common use of the ePortfolio in formal education.

ePortfolio assessment of learning is different from traditional assessment methods, not only because it includes innovations in learning assessment, but because it allows for different people to be engaged in the process, i.e., for self-assessment and peer assessment in addition to teacher assessment. Quality may be judged differently by each; however, the intended learning outcomes remain the quality standards.

Organizational Quality

Entire businesses can create an ePortfolio of products and services for quality assurance, strategic planning and/or marketing. Their ePortfolio can demonstrate to clients that they are learning, continuously improving and responsive to customers needs. Portfolios have been used for years – artists create portfolios of their work, professors create portfolios for tenure, investors create portfolios for asset management. In this sense, the "e" simply removes a mammoth amount of paper and allows for continuous updating of the portfolio through digital technology. When customers or assessors examine the ePortfolio, they may have standards of suitability in their heads. It is made much cleaner when standards are set out in advance so that the ePortfolio can clearly address each quality criteria with digital evidence. More that a catalogue of products or services, it is a digital tool for matching P/S qualities against explicit requirements.

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[26] For more information, please see ePortfolio for the Assessment of Learning, a FuturEd White Paper.

ePortfolio Quality

As a practical example, quality standards have been developed for ePortfolios, so it is now possible to create an ePortfolio ePortfolio – an assessment of how well an ePortfolio tool or service meets with international standards for ePortfolio quality. The following consumer-based quality standards are based on a diagnosis of quality issues and challenge,[27] and created by an international committee of ePortfolio experts.[28]

1. A digital archive and an ePortfolio are developed and owned by the individual or organization creating them. The use of both or either, and any changes to them, are under the control of the individual. Both are confidential and access is controlled by the individual.

2. The ePortfolio system has the capacity to maintain a complete inventory of skills and knowledge acquired by the individual through formal, non-formal, informal, accidental and incidental learning. The ePortfolio development process includes thoughtfulness about learning represented.

3. The ePortfolio system lists and describes skills and knowledge in a way that is recognized and respected by educators, employers, professional bodies, and others who receive and process ePortfolios.   Where possible, the ePortfolio system links to established competency standards but also allows flexibility to accommodate unique or non-specific competencies.

4. The content of the ePortfolio is current, accurate, and verifiable.   Methods of validating learning are flexible, appropriate, and credible.

5. To develop the ePortfolio, there are explicit instructions with examples, a universally-recognized glossary of terms, and professional assistance if required. The ePortfolio is easy to access, use, and modify by the owner.

6. The ePortfolio and archive have the capacity to incorporate a variety of media.

7. The ePortfolio is portable and interoperable in a technical sense.

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[27] *ePortfolio Quality Standards: An International Development Project* (Barker, 2003)

[28]

Participating Organization	Representative
AAHE (American Association for Higher Education)	Darren Cambridge
AMTEC (Association of Media and Technical Education in Canada)	Genevieve Gallant
CACE (Canadian Association for Community Education)	Barb Case
CADE (Canadian Association for Distance Education)	Bill Muirhead
Campus Canada (Industry Canada)	Jane Kralik
CanLearn (Human Resources Development Canada)	Karin Fuller
CAPLA (Canadian Association for Prior Learning Assessment)	Sandra Aarts / Bonnie Kennedy
CEA (Canadian Education Association)	Penny Milton
COL (Commonwealth of Learning)	Angela Kwan / Paul West
CSBA (Canadian School Board Association)	Lionel Sandner
EIfEL (European Institute for E-Learning)	Maureen Layte
Licef –TeleUniversite	Karen Lundgren
CERI / OECD ("watching brief")	Kurt Larsen
Additional ePortfolio / eLearning Experts	Helen Barrett Barbara Cambridge Marquis Bureau

8. The ePortfolio service is multi-purpose, customisable and adaptable to various uses, e.g., assessment by teachers, learning through personal reflection, planning, individual or community asset mapping.

9. An ePortfolio system is seamless, allowing the individual to create many versions of his/her ePortfolio and use this process throughout life, from primary school through higher education and career training to the workplace and lifelong learning environments.

10. An ePortfolio system provides secure long-term storage, privacy, access and ongoing support.

When these quality standards are inserted into an ePortfolio framework, producers of ePortfolio tools can demonstrate if and how well they meet the quality standards by providing digital evidence to support quality assertions.

eLearning Quality

In the same fashion that ePortfolio quality can be assured, eLearning quality can be assured. A set of eLearning quality standards has been created: the Open eQuality Learning Standards.[29] They cover all the elements of eLearning outcomes, processes and practices, and inputs/resources.

1. Quality of Outcomes and Outputs

   - overall academic achievement
   - change in content knowledge and learning skills
   - overall social achievement and change in citizenship-related KSA
   - increase in individual self-confidence and personal strengths
   - preparation for work in the future
   - system effectiveness and efficiency (ROI)

2. Satisfaction with Processes and Practices

   - student management

   - learning management
   - use of technologies
   - communications
   - leadership / administration

3. Adequacy of Inputs and Resources

   - intended learning outcomes
   - learning materials
   - appropriate technologies
   - appropriate and necessary personnel
   - the learning environment, e.g., safety, resources, access to library
   - funding and plans

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[29] The Open eQuality Learning Standards are in the Creative Commons and jointly managed by LIfIA and ElfEL.

One private enterprise, QualitE-Learning Assurance Inc.[30], is licenses to certify eLearning quality, awarding the eQcheck quality mark to those eLearning products and services that meet the quality standards. The eQcheck process is an ePortfolio process – the standards are set within an ePortfolio framework and eLearning providers attach digital evidence of how well they meet each standard. Through this form of eLearning QA, producers of eLearning earn the eQcheck with product ePortfolios that they can use for organizational learning, continuous improvement, product showcasing and marketing. The eQcheck quality mark and the product ePortfolio provide both consumer confidence and consumer protection in eLearning.

In conclusion, much of what is presented here is theoretical. To date there is very little evidence that eLearning meets international quality standards, and there is no evidence that ePortfolio tools and services meet ePortfolio quality standards. In some respects, Quality Assurance is new to the education and training community, accustomed to internal and peer evaluations, external accreditation. The concept of a consumer-focus is particularly new to education and training agencies. Therefore, there is a great deal of room to explore ePortfolio in the context of Quality Assurance for learning, eLearning and ePortfolios themselves.

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[30] QualitE-Learning Assurance Inc, the eQcheck group of companies, is founding member of the European Foundation for E-learning Quality.