



F u t u r E d

**The Electronic Learning Record:
Assessment and Management
of Skills and Knowledge**

A Literature Review

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1. INTRODUCTION

This literature review is part of ongoing FuturEd work on the concept of an electronic learning record or portfolio – a digitally-generated and stored inventory of the skills and knowledge acquired by an individual through either formal or informal learning. This literature review sets the stage for a research project intended to examine the hypothesis that an individualized, electronic learning record could be used to improve the effectiveness, efficiency and equity in training and employment environments.

The concept of a learning record has emerged from developments in the fields of adult literacy, prior learning assessment, lifelong learning, skills profiling and assessment, workforce development, the globalized knowledge-based economy, learning management, and human resources accounting. From the most recent systematic work on this concept,¹ a learning record has been characterized as *a tool with which an individual can express his/her formal and non-formal learning in a standardized and credible manner to a wide variety of stakeholders for personal, economic and education/training development*. In this paper, the term “learning” is used synonymously with “skills and knowledge;” the term “record” is similar to profile, inventory, résumé, dossier, skills passport or portfolio. A learning record is a cumulative account of an individual's learning, perhaps a different form of resume.

This study of electronic learning records is imbedded in national and international developmental work on (1) PLA/PLAR (Prior Learning Assessment and Recognition), (2) lifelong literacy and learning, (3) workforce skills assessment and enhancement; and (4) electronic LMI (Labour Market Information) systems and human capital accounting (HCA), based on the following logic.

1. A learning record is one logical outcome of the PLA/PLAR process. If a person goes to the trouble of determining what s/he knows and can do from education, life and work experiences, it only makes sense to keep a record of that. It has been hypothesized that both PLA/PLAR and a learning record can be used by the individual for career planning and development purposes: to capitalize on strengths, identify learning deficits, and plan for future training or work.
2. A typical PLA/PLAR process includes the development of a portfolio of the acquired skills and knowledge of an individual. Some efforts have been made to systematize and digitize the PLA portfolio, on the assumptions that using a computer to organize and manage a skills

¹ Work completed in 1997 by FuturEd for the Canadian Labour Force Development Board resulted policy recommendations for a Skills and Knowledge Profile. Available at <http://www.plar.com/>

portfolio is both effective and efficient. This assumption is the basis of massive amounts of development work on an Electronic Labour Exchange (ELE) and digital labour market information services in Canada. FuturEd has hypothesized that digital or electronic portfolios could be integrated into the ELE as the individual's contribution to the labour exchange function, in aid of matching the right people to jobs and to training. Electronic portfolios and learning records are currently being used, in a limited fashion, in the fields of education and training at all levels.

3. Portfolio assessment is widely used in the education/training environment, and is particularly utilized and studied in the teaching of literacy, both for children and adults. The use of portfolio assessment, PLAR and a learning record is consistent with values and practices in adult and workplace literacy. Practitioners know to build from strengths in teaching new skills and knowledge, to conduct pre-training skills assessments, and to keep records of progress. Adult educators know that the plans and records are the property of individuals who can and should use them to their advantage in accessing training and employment.
4. Many Canadians are limited in their capacity to become "lifelong learners" and/or acquire stable, ongoing employment by inadequate literacy or essential skills. Many Canadians, however, have skills and knowledge banks that are not utilized effectively or efficiently within the economy. In brief, the need for new forms of assessment, recognition, management and utilization of learning, particularly of adults, is related to the need for different and better human resources development policies and outcomes relative to the Knowledge-based Economy.
5. In the emerging Knowledge-based Economy, work is rewarded, not by the traditional measure of time spent at a task, but by achievement of quality outcomes. Knowledge – data, information and wisdom – are the keys to improving quality and productivity. Traditional employment is giving way to work environments based on the use and production of knowledge. In that environment, it is becoming more and more important for individuals to be clear about what they know and can do, what they provide as niche "producer," what they need to be able to do in the future. Traditional academic credentials do not capture these notions as a learning record can. The learning record may become a different form of resume, setting out the individual's competitive advantage with appropriate substantiation, e.g., credentials, portfolios, artifacts.
6. To meet increasing and changing skill demands in the economy, citizens of developed economies like Canada are encouraged to become "lifelong learners;" however, the incentives

for doing so are vague. The value of formal credentials as the only recognition of learning is being challenged by structural changes in the workplace, in production and consumption. In the promotion of lifelong learning and workforce education/training, the need for “incentives” has been identified – real reasons apart from credentials; real reasons that translate into tangible benefits for individuals, employers, social agencies and society at large. This is the basis for Human Capital Accounting – the management of the knowledge embodied in humans.

7. A learning record may be a necessary component of Human Capital Accounting. It has been hypothesized that a learning record can help to manage human resources better:
 - better matching of the individual’s skills and knowledge to those required in employment;
 - better understand of the learning to target for upgrading efforts and better return-on-investment for those who fund workforce upgrading;
 - better utilization of existing skills and knowledge in the workforce.

Through Human Capital Accounting, all learning is assessed and recognized within the employment environment, thereby providing incentives for lifelong learning and improving human resources utilization.

8. The most appropriate means of arriving at a learning record may be the portfolio development and learning assessment methods PLA/PLAR. Most recent development of the concept of a learning record has led to the electronic learning record. Individuals use a computer program – perhaps on-line – to generate and preserve a comprehensive list of their skills and knowledge after they’ve decided to return to formal training or seek different work. The idea of developing an electronic learning record in advance of choosing a training option or seeking career advancement is not unconventional, however, it is made more by the application of assessment techniques and principles inherent in good PLAR *prior* to choosing a training option or seeking career advancement, to help make those decisions, rather than *after* making decisions and seeking, e.g., advanced placement in a course or program.

This project, then, is not focused on the content or format of a learning record. From among the numerous skills profiling and assessment tools (e.g., WorkKeys) and digital portfolio tools (e.g., Portfolio Building System) that exist, a particular tool will be selected as a sample individualized digital learning inventory. This project is focused on the following research questions.

1. What process can be used to determine the utility of a learning record or skills portfolio from the point of view of individuals, employers, career planners and educators?

2. What are the attributes of an electronic learning record that make it useful for adults in the context of creating a personal skills and knowledge profile?
3. From the perspective of each of the stakeholder groups, how effective is an electronic learning record for:
 - 3.1. career planning purposes?
 - 3.2. increasing access to advancement or career development?
 - 3.3. increasing the effectiveness and efficiency of training?

The purpose of this research project is to build on understanding and developments in the field of “learning records.” It begins with this literature review of related developments in the field of workforce education/training, literacy and lifelong learning, skills assessment and PLAR, electronic labour market information (LMI) and human resources accounting (HRA), and work in the new economy. It explores and sets out the hypotheses and research questions about the effectiveness and efficiency of learning records in the workplace – their use and utility in meeting policy goals of increasing return-on-investment in training and increasing Canada’s prosperity in the globalized knowledge-based economy.

2. CATALOGUING AND ASSESSING LEARNING

2.1. A Learning Record

There are various means to record a person's acquired learning, e.g., test results and report cards in school, performance appraisals at work, personal journals. A learning record may be another word for a portfolio or collection of samples, or it may be a simple listing of acquired skills and knowledge. Labels used to capture the concept include combinations of the words: *skills, knowledge, learning with passport, inventory, portfolio, record, catalogue, profile.*

2.1.1. Samples of Learning Records

A recent word search of related concepts revealed the following samples of actual learning records.

The **California Learning Record**² is 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 System³ is standards-referenced, i.e., it requires analysis of a pattern of performance observed and documented over time in natural settings.

Through the Accreditation and Certification Agreement between CSTEC (Canadian Steel Training and Education Council) and 19 colleges and cegeps in Canada, workers in the steel industry will have a **Learning Passport** that will track the credits they accumulate through formal training and via PLAR at those particular education/training institutions.⁴

AIESEC – an organization that promotes international education – has developed a **Learning Passport** for members. It divides “life” into different categories and the user is encouraged to think where he or she is right now in these different fields of life, where s/he wants to go, how s/he is going to get there and how working in AIESEC can facilitate attaining those goals.⁵ Details are very sketchy.

In the UK, Sybase Education **Services** offers a Passport to Knowledge as a means of accessing

keeping track of unlimited technical training through their firm with one requisition.

The Washington State SOICC provides **Career Development Portfolios** to help individuals relate their education to career interest and aptitudes as they progress through school and life. Three different portfolios include Get-A-Life Career Portfolio for

² Information on the California Learning Record is available at <http://www.ericae.net/eac/eac0060.htm>

³ Information on the CLRAS is available at <http://www.cwrl.utexas.edu/~syverson/olr/clrsystem.html>

⁴ Information about CSTEC is available at <http://www.cstec.ca/skill.html>

⁵ From a conference report at <http://ic98.aiesec.org/cc/hr.html>

⁶ Information on Passport to Knowledge is at <http://www.sybase.co.uk/education/passport.html>

secondary school students; School-to-Work Transition Planner for students completing secondary school; and Work/Life Planner, a career portfolio for adults in transition. They must be ordered, but the format is unknown.⁷

In Australia, VETASSESS⁸ operates a national Skills Passport Centre which issues Skills Passports recording the work-related and general competencies that have been attained by an individual and confirmed through formal assessment process. The Passport is confidential and will not be made available to any third party without written permission of the Passport holder. The **Skills Passport** records:

units of competency from national industry/enterprise standards registered with the National Training Framework Committee of the Australian National Training Authority;

modules from courses/ training programs accredited by State/Territory training authorities;

vocational education and training qualifications issued by Registered Training Organizations, including public and registered private providers; and/or

other forms of certification issued by regulatory agencies, Registered Training organizations, senior secondary school authorities, higher education institutions, industry organizations and enterprises.

The VETASSESS project builds on work to improve student mobility between higher education and vocational education training (VET) sectors. It is being phased in under the Australian Recognition Framework through an assessor network and Registered Training Organizations.

Available from Advising and Assessment Services of CAEL (Council on Adult and Experiential Learning) is the **Employee Potential Profile**.⁹ An assessment process provides employees with knowledge about their "soft skill" capabilities and motivates them to become involved in career planning.

In an earlier literature review of the concept,¹⁰ Barker located a variety of learning records in Canada, the US, and elsewhere. In 1996, the organization with the most long-standing interest in a learning record was the Corporate - Higher Education Forum (CHEF). For CHEF purposes, a "learning passport" was defined as a certificate of assessed competence and/or a self-maintained record of formal and experiential learning achievements. According to John Dinsmore, former CHEF president and learning passport advocate, "benefits include better planning of learning needs, motivation to learn effectively, helping to choose what to learn and lessening waste due to wrong choices. Widely employed, such a record can help to foster a learning culture."¹¹ In a 1993 report, CHEF had proposed that a Learning Passport, in response to several needs, would recognize and respond creatively to the reality of lifelong learning;

⁷ Information on Career Development Portfolios is at <http://www.wa.gov/esd/soicc/prtfolio.htm>

⁸ Information on VETASSESS is available at <http://www.bhtafe.edu.au/Hosted/VetAssess/skillpas/skillpas.htm>

⁹ Limited information is available at <http://www.cael.org/servemp/advise.html>

¹⁰ By FuturEd for the CLFDB in 1996

¹¹ From correspondence regarding a market-fostered learning system model, J. Dinsmore to K. Barker, February 1996.

validate a wide variety of learning experiences at a time when output measures are considered essential;
connect employers' requirements with educators' teaching emphasis and learning assessment;
focus attention on the need for students to develop specific competencies as well as knowledge;
encourage self-management of education and training to enhance lifetime employability;
facilitate the career changes most persons will make over a working life; and
increase the portability of credentials.

In addition to the CHEF leadership, there had been a vast number of separate initiatives. 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.¹² 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. At Concordia College in Edmonton, the Centre for Career Development Innovation had developed several programs/products to encourage secondary level students to plan and manage the development of skills for the workplace. Notable among them were:

FOCUS: A Personal Inventory (1993) consisting of an IBM diskette and instruction booklet to guide students in maintaining an inventory of personal development;

ENGAGE, a magazine and five booklets for student, teacher, workshop leader and parent to use in planning career development;

Framework For Success: An Employment Skills Handbook to assess progress in self-development work.

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

¹² Source is Sarah Maloney, WWEBS Coordinator of Literacy Link Eastern Ontario.

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;¹³ and they could use the diary as a source for self-accredited group programs and self-directed learning portfolios.

In the university setting, efforts focused on both the clients/customers and on the provider of education/training, for example:

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;

a teaching portfolio is utilized by some faculty to demonstrate excellence and communicate their strategies, strengths, weaknesses, and forms of evidence to others;¹⁴

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;

a Learning Passport for Arts students was soon to be available at the University of Alberta;

an *Automated Resumé Registry and Referral System* at the University of Saskatchewan was used to match graduates and employers; however

professional educators in Halifax¹⁵ had stated conclusively: "There is currently no Cumulative Record of Learning Achievement which incorporates formal and experiential learning across educational programs and learning experiences."

In the minds of some, a learning record was like a complex transcript of achievement at formal learning institutions. For example, in proposing its Adult Learners' Assessment and Advising Centre,¹⁶ a consortium of Nova Scotia universities alluded to "a Learning Passport system, enabling learners to build portfolios of education and training by drawing on all sectors of the

¹³ Both MOCOMP and PCDiary are copyrighted products. Both service as excellent models for process and development.

¹⁴ *Preparing a Teaching Portfolio*, which includes a list of potential materials for a teaching portfolio and questions to guide the development of a portfolio, is available at <http://www.ilstu.edu/depts/CAT/prepaport.html>.

¹⁵ The Consortium of Nova Scotia University Continuing Educators who, in partnership with the Native Council of Nova Scotia, Nova Scotia Community College, the Nova Scotia Department of Education and Human Resources Development Canada have begun to develop an adult learning assessment centre in Halifax.

¹⁶ Taken from page 5 of a proposal generated by the Consortium of Nova Scotia University Continuing Educators in partnership with the Native Council of Nova Scotia and Nova Scotia Community College, submitted to the Nova Scotia Department of Education and Human Resources Development Canada, June 1995.

higher education system." They pointed out that development of such a system "requires substantial policy initiatives in the areas of credit transfer, course articulation, modular curriculum development and accreditation of learning." They speculated that "the portfolio building approach to education may ultimately require accreditation of applied degrees, consisting of learning in different contexts: community college, non-credit continuing education, university and on-the-job. The variety of institutions that may provide components of learners' portfolios makes it unlikely that any one of them would accredit an applied degree. Instead, an accrediting agency which is not itself a provider is the most likely method of introducing applied and non-traditional degrees into a higher education system." All in all, however, the learning record they conceived of did not take into account non-formal learning.

In the United States, there were both commercial ventures and public policy endeavours, small scale and large, related to the development of a learning record as it was conceived of in 1996. One example was a commercial product call Life Work Portfolio, "a place to store information about yourself that will help you look at career options, make decisions and plans, write résumés, and prepare for interviews....takes you, step by step, through the process of career development."¹⁷ It was developed with an advisory committee representing job training programs, adult education, and displaced homemakers programs; reviewed by a National Review Team comprised of leaders in the field of career development; and piloted at major universities, corporation sites, veterans affairs offices, job training offices and community colleges¹⁸. The Life Work Portfolio was "both a place and a process," a place to store information about oneself, and a process of career development. It claimed to:

- follow basic steps of career development;
- comply with National Career Development Guidelines;
- be useful in many settings, by groups or by individuals;
- teach a decision-making model and steps for goal setting;
- organize personal documentation of competencies, skills, accomplishments;
- offer a flexible, expandable format;
- allow people to begin wherever they are in the process;
- provide a framework as individuals progress through various training programs; and
- tie in well with existing career development programs, job seeking workshops or self-employment programs.

¹⁷ From a brochure advertising the Life Work Portfolio, available from Oklahoma Department of Vo-Tech, 1-800-654-4502. Comes with portfolio and guide at a cost of approximately \$5.00 US.

¹⁸ The development process is critical. This example may be a good model.

A second example, also a commercial product, is WorkKeys. Developed by the American College Testing (ACT) Program, WorkKeys is a comprehensive system that includes job profiling or analysis of the skill requirements of jobs; individual skill assessment to determine one's current skills; and instructional support to help educators as they assist learners in improving their skills. ACT has identified "key generic employability skills... crucial to effective performance on most jobs."¹⁹ In Canada, the Association of Canadian Community Colleges has the rights to promote and profit from WorkKeys. What is relevant for purposes of the learning record is the portion of the process called Skill Assessment, an actual tool and matrix, through which an individual is supposed to be able to:

- document and credential generic employability skills;
- provide employers with evidence of skills attained;
- identify personal education and training needs;
- link education and training with employment;
- document skill development over time;
- identify jobs for which current preparation is sufficient;
- explore appropriate career paths; and
- target training to skill needs.

On a more esoteric level, at the 1996 Annual meeting of the American Council on Education, mention was made of a proposal to develop a single system of learning and credentialing which would operate locally through community learning systems and nationally with a clearinghouse and resource centre, and for which a learning passport would be an essential element. There was not a single US model for a learning record that could simply be adopted at that time.

Unlike in Canada or the US, in the United Kingdom, a form of learning record system was already in place. A National Record of Achievement (NRA) had been proposed and piloted in the 1980s by the Department of Education and Science (DES). A model was introduced in March 1991, created jointly by the DES and the Employment Department. As of January 1993, a NRA (National Record of Achievement) is mandatory for all school leavers. The format is very basic: a hard covered 9"x12" book with clear plastic pockets holding pages on which information can be entered. Where appropriate, there is space for the signature of the person providing accreditation or validation of achievement. For school leavers and for adult learners/workers, the NRA provides a voluntary national recording system for all qualifications and achievements in which individuals

¹⁹ Information about WorkKeys is available from ACT Client Services, PO Box 168, Iowa City, IA 52243-0168.

can enter personal details, a summary of qualifications and credits towards them, summary of other achievements and experiences, a personal statement, and details of school attendance and employment history. The NRA can be linked

to the National Database of Vocational Qualifications and the National Vocational Qualifications system.²⁰ Its successful use requires considerable support for personal and career

development. A study of the application of the NRA²¹ for action planning reveals the following.

In Further Education, there is a growing use of the NRA as part of admissions and initial guidance processes. There appears to be limited use of recording achievement or action planning in preparation for transition at the end of FE courses.

In Higher Education, there is little evidence of a culture encouraging student action planning and the recording of achievement. The trend to a wider range of entrants to HE is focusing attention on assessment and accreditation of prior learning.

The training sector make more extensive use of the NRA. It is a source of concern that action planning processes can be driven by the requirements of NVQ's, with little or no focus upon the needs or personal development of individual trainees.

In the employment environment, there is generally little evidence of action planning, review and recording of achievement, although most larger organizations have appraisal or other development processes. Appreciation of the potential of the NRA to support employee development is low.

For individuals, the NRA can provide a framework to support transition and development throughout life, but the support and encouragement from organizations is not available.

Following on and building on the NRA, an actual Skills Passport had been proposed and promoted by the Confederation of British Industry (CBI). In its 1995 report entitled *Realizing the Vision: A Skills Passport*, the CBI called for a skills passport that stressed lifetime learning and the acquisition of core skills. The NRA supplemented by individual action plans was the favoured model. According to the CBI, the passport would be part of a training framework where the three major stakeholders - government, employers and individuals - have contractual obligations. In order for the notion to work, a large number of initiatives had been put in place (e.g., NVQ's, Investors in People program and standards) and more were required. For the CBI, the skills passport is part of a "skills revolution" to help citizens and businesses of the UK remain competitive in a global economy. In the report,²² they state:

In a world of growing uncertainty, we all need a new passport and the best passport for the 21st century will be a skills passport. A skills passport which will help to secure that first job. A passport which turns a job into a career. And a passport which helps us to move successfully from one phase in life to another; from job to family to job; from temporary to full-time to part-time work; from income earning to retirement to community

²⁰ More information about the British system of NVQ's is available in the background paper prepared by K. Barker for the 1995 Training Standards project.

²¹ A report of the 1994 study was summarized in *The National Record of Achievement and Support for Personal and Career Development: A Review of Research and Current Activity in Employment, Training, and Post-compulsory Education*.

²² Taken from page 6 of *Realizing The Vision: A Skills Passport* (Confederation of British Industry, 1995).

work. Only a skills passport can meet the challenge of changing technology and globalization, because individuals and employers share a need for sustained levels of competence - the ability to carry out increasingly complex roles requiring adaptability, responsibility and creativity..... Training and updating of skills still receive much less attention than they should, and learning as a whole tends to be static, not dynamic; a temporary passport, not one for life.

According to the CBI, the Learning Record should indicate acquired competence based on a secure possession of the core skills: communication, working with others, application of numbers, improving own learning and performance, problem solving, and information technology. The

Skills Passport notion, as the CBI conceived of it, is:

for all: every individual has equal access to the skills passport and to the full range of possible routes of progression;

owned by the individual: it empowers each person to take control of his or her own learning;

for life: learning will not cease at 16, 18, or 21, but will need constant updating to be useful and valid, with the individual owner of the skills passport being responsible for ensuring that updating takes place; and

dependent on partnership: its credibility requires the support of the whole community - governments, employers, educationalists and trainers.

The CBI went even further to suggest a learning contract in which:

the government funds foundation learning, deals with failures of the learning market and fosters lifetime learning for all;

the employer funds all employee training in terms of job-specific and firm-specific learning, will contribute to broader knowledge and skills that will assist the employee's longer term performance and will support foundation education through education business links; and

the individual funds all those aspects of learning throughout life which are not employment related or part of foundation learning, and will pursue opportunities to develop core transferable skills.

Development of a skills passport scheme, according to the CBI, would require the creation of world-class outcomes from foundational learning, employer commitment to lifetime learning, and long-term funding.

In conclusion, the breadth of these samples indicates that, with regard to the concept of a learning record, there is wide variety and complexity with different motives and uses. More importantly, there is no standardized form or intended utilization in Canada as there is in other countries.

1.2. The Skills and Knowledge Profile

In Canada, there was a brief attempt to work towards a skills profile or learning passport. In 1996, work began at the Canadian Labour Force Development Board (CLFDB) on the concept of a learning record and concluded in 1997 with a statement about the utility and nature of a Skills and Knowledge Profile (SKP). According to Barker,²³ the CLFDB and many others had become interested in a record or portfolio that could:

- account for the variety of formal and non-formal learning of an individual,
- describe and "certify" the skills and knowledge acquired by this individual,
- be developed and "owned" by individual Canadians,
- be used to increase the portability of individual's skills and credentials between employment circumstances and geographic regions of Canada,

- be used to promote a training culture in Canada,
- become the supply-side information, in a national Labour Market Information (LMI) system, about individuals available for work or training, and

- ultimately increase the efficiency of the entire labour market system.

Work on a learning record was an item of responsibility suggested to the CLFDB by the PLAR Working Group in its Recommended National Strategy²⁴. The work on learning records was undertaken in the context of innovations in the following:

- résumé writing: away from chronological development to a functional inventory of skills used for career development;

- the changing nature of work: away from secure jobs to self-directed employment based on niche skills and knowledge;

- the proliferation of electronic labour exchange systems, local through to international, on the Internet in addition to traditional methods of job searching;

- labour market information systems, raising questions about how one enters information about oneself into the electronic job-matching process;

- labour mobility and the attempt to remove systemic barriers to the transferability and portability of occupational credentials;

- education and training reform in response to such challenges as reduced funding, competing demands for resources, stakeholder demands for accountability, and customer dissatisfaction;

- human capital accounting, asset management and knowledge industries; and

- prior learning assessment and recognition (PLAR).

²³ Barker, K. (1996). *The CLFDB Learning Record Project Background Paper*. Ottawa: Canadian Labour Force Development Board.

²⁴ Improving Training and Access to Employment through Prior Learning Assessment and Recognition (CLFDB, July 1996).

In 1996, then, the design and implementation of a Learning Record policy/strategy was related to a number of separate but interconnected public policy issues. Like Training Standards and PLAR (Prior Learning Assessment and Recognition) before it, the Learning Record was imbedded in a complex set of national (federal/provincial) public policy issues: changing responsibilities for training and labour market management (devolution to the provinces); national standards and standard setting; national unity; technological innovations and industrial development; economic globalization; credentialism and workplace change; development of a lifelong learning culture; human resource development practices. The basis for much innovation in labour force development lies in the interrelationships between national unity, national standards, and devolution of federal responsibilities to the provinces;

challenges to Canada's credentialing system, i.e., its formal, public education and training system;²⁵ and

economic restructuring and globalization that form the basis for much innovation in labour force development.

In this context, any proposal for a Canada-wide learning record system and national standards that describe the content, development process, and usage was clearly a major public policy issue. A CLFDB Working Group was asked to address the following questions.

1. In Canada, what is "the problem" that a Learning Record, given all that we know about it, can address? What are the policy options or alternatives, in addition to a Learning Record, that address this problem? Is a Learning Record the best policy option?
2. In Canada, what is "the problem" that a Learning Record, should address? What are the underlying values and assumptions of the problem and the "solution"? What are the implications and potential outcomes of this policy option?

After considerable deliberation, the Working Group – made up of representatives from business, labour, the designated equity-seeking groups and the education community – completed its work in February 1997. It produced a policy document which was reproduced on the PLAR web site and no further development work was undertaken.

The CLFDB Working Group labelled the learning record as a Skills and Knowledge Profile (SKP), a tool by which an individual could express his/her formal and non-formal learning in a standardized and credible manner to a wide variety of stakeholders for personal, economic and education/training development. It was different from a traditional resume in the following ways.

²⁵ This is explored more fully in the background paper to the PLAR project, available upon request from the CLFDB (613-230-6264).

Characteristic	Traditional Resumé	Skills and Knowledge Profile
<i>content</i>	lists of credentials and work experiences (with skills and knowledge implied)	lists of skills and knowledge (with learning experiences and credentials referenced where appropriate)
<i>development process</i>	keep track of formal credentials, dates, employer addresses, job descriptions	examine learning experiences for the skills and knowledge acquired
<i>perspective on learning</i>	learning happens largely in formal institutions, and credentials and work experience are the valued learning opportunities	learning happens in both formal and non-formal situations, and all learning has value
<i>format</i>	short and factual	may be more comprehensive, with broader lists that can be cross-referenced with actual skills and knowledge in job and training requirements
<i>validation</i>	credentials and employer's references have been unchallenged proxies for learning	different forms of validation are required, in addition to credentials and references, e.g., personal references
<i>purpose</i>	to get a job	for career planning and development: appropriate work and/or training

The CLFDB concluded that, hypothetically, the systematic application of a such an SKP could increase educational productivity, enhance economic productivity and resource utilization, and enable individuals to maintain balance and a sense of self in turbulent times. The following six problem areas that a learning record or Skills and Knowledge Profile could contribute to resolving were discussed. The following six points and summary policy goals are excerpted directly from the CLFDB paper.²⁶

First, large numbers of Canadians, approximately 10% in October 1996, are unemployed; even more, in large numbers, are underemployed. Not all those individuals are unemployable. This is a waste of human resources. It is often assumed that unemployed and underemployed individuals are not skilled, and that they'd be employed if they had the skills and knowledge that are in demand. This may be an incorrect assumption. Most people have a far broader array of skills and knowledge than they are given credit for, learning that has been acquired over time through education, work and life experiences in Canada and elsewhere. They need the opportunity to determine, describe and use the skills they DO have. It may be that there is available work (a job and/or self-employment) that requires that learning. A learning record can

²⁶ At http://www.plar.com/skills_knowledge/index.html

be the mechanism through which individuals take stock of their varied skills and knowledge and organize them in a systematic fashion to gain employment or more appropriate employment.

Second, although many immigrants come to Canada with highly-developed skills and knowledge, they have difficulty gaining recognition of that learning and therefore have enormous difficulty obtaining relevant and appropriate employment. Large numbers of unemployed and underemployed people have gained skills and knowledge outside Canada and within systems that are different from and unfamiliar to the Canadian context. Employers, educational institutions, accrediting and regulatory bodies do not have the tools to assess these skills, so these individuals often remain marginalized. This, too, is a waste of human resources and a contradiction of Canada's immigration policy. An SKP becomes a tool by which to express and seek recognition for skills and knowledge acquired outside Canada.

Third, large numbers of Canadians recognize that they need skill upgrading and further education for employability reasons. Many adult learners do not have the tools and opportunities they need to ensure that their resources (time, energy and finances) are used to advantage. This, too, results in wasted resources. It doesn't make sense for adult learners to re-study skills and knowledge that have already been acquired. It does make sense that, if individuals have an inventory of their acquired learning, they could:

- target missing or needed skills and/or knowledge through formal and/or non-formal learning experiences;
- expand and enhance acquired skills and knowledge;

- get credit towards formal credentials or certification, if those are necessary.

Resources of the individual, governments and training institutions are used more efficiently and effectively through this process of assessing and recognizing the learning that an individual already has, providing "top up" learning opportunities in ways that are responsive, customized, competency-based, modularized, and flexible. A learning record such as the Skills and Knowledge Profile can be a mechanism by which individuals inventory or catalogue their acquired learning for purposes of skill upgrading, credential acquisition, and lifelong learning.

Fourth, as individuals look for jobs or make career changes, they find dozens and dozens of different means by which to make application for work. The variety of options and expectations is confusing, frustrating and time-consuming for individuals, both employers and workers, to deal with. When people apply for work, they are under pressure to create resumés that help them stand out from among the many job-seekers. The options seem endless; advice is plentiful, yet contradictory. On the other side of the table, to select employees, employers are faced with

piles of resumé's which, after a very short time, begin to look alike, with lists of similar credentials and bewildering work experiences. Why can't individuals just list what they know and can do? A learning record, thoughtfully conceived, can be a mechanism or tool for presenting one's acquired skills and knowledge and for matching it, in a systematic fashion, to the skills and knowledge that is required in a particular work situation(s). It can make the labour exchange function far more effective, efficient and equitable.

Fifth, often employers feel that they have to lay people off and/or find new workers when, in fact, the human resources they need may be already in their workforce. They may not have effective tools for determining and recognizing the skills and knowledge of their existing workforce. As employers seek to enhance productivity and maximize the use of resources, they may not recognize the wealth of their existing human resources. A learning record can be a tool for better describing, understanding and applying the capabilities of the existing workforce. It can help match people to new and different jobs within the worksite. And it can be used to help with planning for training and career development to meet the goals of individuals and of the business enterprise in a systematic and timely fashion.

Sixth, there is an expectation, in the workforce, that individuals will continue to learn new skills and knowledge, and to be able to demonstrate that they are doing so. Keeping track of the range and scope of continuous learning may be complex and difficult. Increasingly, individuals are adding to their repertoire of skills and knowledge by deliberately learning through, for example, training programs, reading materials, software programs, seminars. Keeping track of that "formal learning" is a problem, given that each may be different in terms of training source or provider, recognition of completion, and duration. Those who bother to keep track may end up with nothing more than a list of courses, seminars, etc. from a number of training providers and venues. What do they really mean? An SKP may be a means by which to account for lifelong learning, translating the individual's learning achievements from, for example, a workshop, a good book, or a university course into a list of skills and knowledge that can be continuously added to. It can become a tool to promote transitions from school to work to school to work throughout a lifetime. Each of these six problems was framed as a HRD policy goal to be addressed as follows.

If.....	then, the SKP could be a means by which
1. human potential should not be wasted because individuals are unemployed and/or underemployed due to the fact that their repertoire of skills and knowledge is not fully catalogued or utilized	to recognize an individual's entire repertoire of skills and knowledge acquired through formal education/training and through life and work experience
2. immigration policy favors individuals with high levels of skill and knowledge, yet those very people have difficulty getting employment that takes advantage of their acquired skill and knowledge	employers and accrediting institutions can assess and recognize the body of skills and knowledge that foreign-trained workers bring to the employment environment
3. time and finances should not be wasted as they are when the formal learning system (1) does not recognize that individuals may already possess some skills and knowledge, and (2) expects learners to fit standard program timeframes	to recognize that individuals, as potential students, have and can credibly demonstrate their acquired learning so that they may shorten formal study/training time, meet some pre-requisites, and target learning needs
4. people and jobs should be more easily matched because (1) individuals should present their entire record of learning, and (2) matching processes should be less numerous and varied	both workers and employers could match individual learning records to skills and knowledge requirements in a systematic, authentic fashion
5. employers should realize the full capacity in their workforce	employers could use understand and utilize the individual and collective skills and knowledge of their existing workforce
6. lifelong learning is an expectation in contemporary society	a means by which to keep track of skills and knowledge acquired by individuals

These six HRD policy goals were to be achieved, in part, by the systematic implementation of the SKP concept on a pan-Canadian basis. It was hypothesized that, by meeting certain standards, the SKP could systematically, comprehensively and credibly contribute to achieving some labour force development policy goals. A major purpose of the CLFDB project was to develop standards in a consensus-based, consultative process including all the labour market partners. The standards were based on the following logic.

1. If the SKP is intended to contribute to the effectiveness, efficiency, and equity of labour force development, the SKP itself must be:
 - effective: it must do what it claims to do, it must profile skills and knowledge, in a manner that is recognized by all the labour market partners and that places value on learning that has previously been hidden
 - efficient: it must make maximum use of resources, human, time, and financial, neither duplicating existing processes nor necessitating too many additional resources
 - equitable: it must be accessible to and usable by all, barrier and bias-free

easily usable: it must be accurate and adequate

2. In order to make a contribution to increasing effectiveness, efficiency and equity, it must be somehow different in a positive sense. There would be no need for innovations, such as the SKP, if the system were considered by all to be effective, efficient and equitable.

3. In order to make a contribution to increasing effectiveness, efficiency and equity of the human resource development system, the SKP must make a positive contribution for one or all of the labour market partners while making no negative contribution for any labour market partner group²⁷. The "labour market partners" include: employers, workers and learners, providers of education/training products and services together with accrediting and regulatory bodies, and society represented by federal and provincial governments.

Therefore, in Canada's labour force development system, the SKP should contribute to:

the effectiveness, efficiency and equity of education and training by:

increasing access, for individuals, through the recognition of non-formal learning (i.e., skills and knowledge acquired in the work, community, leisure and family environment), and by helping to meet course/program prerequisites;

increasing numbers and variety in learners served by teaching institutions, by targeting those most in need and working together to meet the needs of individual learners and communities; and

reducing redundancy, by not requiring individuals to study skills and knowledge that they may have already acquired and, thereby, the resources required, the time and finances for both institutions and individuals.

economic productivity and resource utilization by:

enabling the appropriate utilization of the existing skills and knowledge of individuals, by workers and learners, and of the existing workforce by employers and industry; and

increasing access to employment for the unemployed, and to appropriate employment for the underemployed by profiling (identifying and listing) the entire range of skills and knowledge held by individuals.

the ability of individuals to maintain balance and a sense of self in turbulent times by:

connecting individuals to the labour force development system through equitable access and accommodation in opportunity, programs and services;

increasing self-awareness, utilizing strengths and improving on skill/knowledge deficits, and career planning; and

providing more and more relevant information to the labour market partners, particularly those who can provide opportunity, stability and leadership.

²⁷ Good public policy should meet, at least, the following three criteria: (1) the Pareto Criterion: Will the policy action result in at least one person being better off and no persons being worse off? (2) the Kaldor-Hicks Criterion: Will the policy action result in a net gain in socioeconomic efficiency and can those who gain compensate the losers? (3) the Rawls Criterion: Will the policy action result in a gain in welfare for the members of society who are worst off?

4. In order for an SKP to make a contribution to increasing the effectiveness, efficiency and equity of Canada's labour force development system, it must include both an instrument (format, content), a process (access, development, maintenance) and a utility for all the labour market partners that meet minimum standards for effectiveness, efficiency and equity.

The CLFDB-recommended national SKP standards (1997) are as follows.

1. The SKP should list and describe skills and knowledge in a way that is recognized and respected by all the labour market partners.
2. The SKP should have the capacity to be a complete inventory of skills and knowledge acquired by the individual regardless of where they were acquired.
3. An individual should develop and own his/her SKP. Some people may require informed assistance to achieve this. The use of the SKP and any changes to it should be completely controlled by the individual.
4. The content of the SKP should be current, accurate and verifiable.
5. The SKP should allow flexibility to accommodate unique or industry-specific skills.
6. The SKP should follow a standardized format. The SKP content and format should link to existing and developing labour market exchange systems.
7. The SKP and its development process should be relatively simple and straight forward.
8. The development and use of the SKP for any and all Canadians should be barrier-free; that is to say, social identity, disability and geography should not be barriers to individuals.
9. The development and content of an SKP should be bias-free.
10. An SKP should not create barriers; for example, a person who does not have an SKP is not discriminated against for the lack of one, or for the skills revealed.

The creation of these standards was the last work done by the CLFDB on the concept of a learning record.

In conclusion, this CLFDB learning record work is the leaping off point for the current research project under way. The intention is to develop a means by which to test the hypotheses and determine if there is any benefit to furthering the implementation of a learning record in British Columbia and in Canada.

1.3. The Portfolio and Portfolio Assessment

As stated earlier, a portfolio is one form of a learning record, and portfolio assessment is a common form of PLA/PLAR. A portfolio focuses on an 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. Ideally, a portfolio 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.²⁸ Authentic assessment involves examining students' basic skills, control of information, high level of understanding, personal characteristics, and habits of mind;²⁹ and allows students to participate actively in their own learning.³⁰ 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

²⁸ 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/>

²⁹ 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

³⁰ 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

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. Student-centred assessment is intended to focus on what the student can do. 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.³¹ 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 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.³² 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,³³
 - to think reflectively about experiences in a community service-learning program,³⁴
 - to bridge "personal and professional funds of knowledge,"³⁵
2. in K-12 classrooms:
 - to assess student learning,³⁶
 - to achieve educational outcomes other than acquiring content knowledge and performing well on standardized multiple-choice tests, e.g., the ability to
 - u
 - late statements about personal beliefs and values, goals and aspirations,
 - for students to communicate the story of their learning to their parents,³⁸

³¹ See, for example, *Portfolio Assessment* at <http://www.eduplace.com/rdg/res/literacy/assess6.html>

³² *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

³³ *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

³⁴ *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

³⁵ *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

³⁶ *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

as the basis for reformed parent-teacher conferences,³⁹
to shift some of the responsibility for assessment from the teacher to the
student,⁴⁰
to the advantage of special education students, e.g., in displaying authentic
tasks,⁴¹
in literacy programs, to assess reading in early primary grades.⁴²

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,⁴³ and elsewhere,⁴⁴ 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.⁴⁵

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

³⁷ *Student Reflection in Portfolio Assessment* (Wolfe, 1996) on the ERIC web site at http://www.indiana.edu/~eric_rec/ieo/bibs/portfoli.html

³⁸ The Power of Portfolios (Hebert and Schultz, 1996) on the ERIC web site at http://www.indiana.edu/~eric_rec/ieo/bibs/portfoli.html

³⁹ 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

⁴⁰ 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

⁴¹ 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

⁴² 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

⁴³ 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.wysiwyg://617/http://node.on.ca/tfl/plar/)
<http://www.plar.com/>

⁴⁴ 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>

⁴⁵ Available at <http://www.seamonkey.ed.asu.edu/~vito/icme.html>.

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

One way to validate claims of evidence or achievement is to have supervisors or someone in authority validate with a signature. For example, the Sectoral Skills Council has developed a booklet that lists the program modules for a variety of training programs with the actual learning outcomes (general and specific skills) for each module. Under each terminal performance objective or specific skill is a place for the date, the supervisor's signature, the signature of a Joint Committee/JWTC Representative (labour), and the trainee's signature. A second way is to extrapolate from years of experience. For example, the JobScan questionnaire for job seekers lists areas of expertise and categories of work setting or environment, and asks only for an indication of how many years of experience for each.⁴⁶ A third way is to extrapolate from the type of experience. For example, the system used by MedHunters, a recruiting firm for the healthcare industry, is to ask for a detailed description of where the individual has worked. The MedHunters system is fully electronic, and individuals enter data into a computerized database. The recruiters at MedHunters feel that they have enough experience to extrapolate from the individual's work venues (e.g., a teaching hospital or a small town doctors office) just what skills and knowledge the individual has. A fourth way is to set up formal institutions, either mandatory or as a service. For example, in the US, the Centre for Adult Learning and Educational Credentials, part of the American Council on Education⁴⁷, has the capacity to take formal responsibility for credentialing of learning acquired outside educational institutions and for assessing extra-institutional learning validly and reliably. It does this through programs that focus on:

- linking the military education/training environment with the public system (AARTS: Army/American Council on Education Registry Transcript System; and Military Evaluations Program);

- evaluation of national standardized tests and professional licensure exams for college credit recommendation (Credit by Examination Program);
- alternate means for adults to earn high school credits (GED: General Education Development Testing Service);

- evaluation of formal training offered by business, industry, government agencies, labour unions, and professional associations for college credit recommendations (PONSI: Program on Non-collegiate Sponsored Instruction).

⁴⁶ JobScan is a service of HRDC.

⁴⁷ American Council on Education, One Dupont Circle, Suite 250, Washington DC 20036-1193

These are examples of processes that are followed, and options available. In summation, rigorous portfolio assessment is one of the cornerstones to the systematic implementation of a learning record.

1.4. Electronic Portfolio

The use of a learning portfolio or skills passport may be made most effective and efficient with the application of ICT (Information and Communications Technology). An electronic portfolio is a computer-generated and managed inventory of a person's skills and knowledge demonstrated through a variety of media (e.g., audio, video, numerical data and graphics) and formats (narrative text, checklists, artifacts). An electronic portfolio can accommodate scanned or digital photos, video and sound clips, animations, recordings, text, traditional writings and drawings; it can be posted to the Internet and it can be interactive.

1.4.1. Samples of Electronic Portfolios

In the academic setting, an electronic portfolio (EP) is "a concise, annotated collection of student work that reflects educational standards" developed and maintained in digital format via software or on-line authoring tools.⁴⁸ Another name is "digital portfolio" and administrative steps to the development of digital portfolio system are set out on-line.⁴⁹ An extensive list of Alternative Assessment and Electronic Portfolios web sites is also available on-line.⁵⁰

In the education environment, student portfolios are being used for accountability reporting, program evaluations, and a variety of administrative decisions affecting the future of individual students. Difficulties and limitations are acknowledged.⁵¹ The advantages of an EP may include:

- allowing students to assume ownership and control of their own learning;
- motivating students to produce high quality work because it can be easily shared to audiences abroad;
- providing teachers and students with the opportunity for feedback;
- providing a concrete basis for discussion;
- exhibiting public "benchmark" performance;
- providing ready accessibility to interested parties via the Internet;
- enabling the storage of multiple media, e.g., samples of oral reading;
- ease of upgrading and organization; and

⁴⁸ *Electronic Portfolios* (Guhlin, 1996) at <http://www.esc20.net/techserv/materials/portfolio>

⁴⁹ *The Digital Portfolio: A Richer Picture of Student Performance* (Niguidula, 1997) at http://www.essentialschools.org/pubs/exhib_schdes/dp/dpframe.htm

⁵⁰ *Dr. Helen Barrett's favorite links on Alternative Assessment and Electronic Portfolios* at <http://transition.alaska.edu/www/Portfolios/bookmarks.html>

⁵¹ *Student Portfolios: Administrative Uses*. (Office of Research, Education Consumer Guide, 1993) at <http://www.ed.gov/pubs/OR/ConsumerGuides/admuses.html>

allowing cross-referencing of student work via hyperlinks.

Disadvantages of an EP include the need for staff development for classroom teachers, access to a multimedia computer with digital camera and/or flatbed scanner, Internet access in the classroom, and Web page development skills for the teacher.

A large number of software programs are commercially available; and the following are a sample. Software called the Grady Profile⁵² is intended to manage new assessment models for performance assessment, authentic assessment, standards-based assessment and portfolio pre K-college level.

Software called CAPWARE,⁵³ a series of computerized assessment programs, provide a profile of a student's style of learning, motivation and self-concept.

Software from Schoolhouse⁵⁴ enables a teacher to create a Learner Profile via a Palm connected organizer. Performance Indicators helps set out observational assessment criteria, Learner Profile Reports analyze observations and modify instructions to meet individual student needs, LP Junior allows students to assess themselves, and GradeMaker converts the assessment data into numerical grading format.

From Super School Software, The Portfolio Assessment Kit⁵⁵ is intended to be a comprehensive approach to maintaining a portfolio of students work by capturing representative samples of work done over time. The kit includes a complete portfolio assessment program.

Software from Stardata called Portfolio Builder⁵⁶ can be used by students to create electronic portfolios and by schools to collect student post secondary preferences. Students enter information such as career interests, college choices, employment criteria and work history; and update their portfolios as the school year progresses. They can print out copies and create instant resumes or letters to colleges and employers.

From IBM, the SchoolVista Assessment Suite⁵⁷ for grades K-12 is a series of tools including an Authentic Assessment Tool that enables teachers to evaluate a learning portfolio. Teachers select the portfolio components and students create their work using a multimedia authoring tool. The Authentic Assessment Tool offers quality statements, or rubrics, along with benchmarks which measure student progress.

Examples of EP's being used in the education system include the following.

Based on the California Learning Record (which is systematized but not digitalized), the **Online Learning Record**⁵⁸ has been developed for use in adult and post-secondary settings. It provides a format for documenting student progress and achievement, based on interviews, observations over time, and samples of students' naturally-occurring work, and well-supported interpretations of learning across five dimensions: confidence and independence, knowledge and understanding, skills and strategies, use

⁵² Information is available at <http://www.aurbach.com/>

⁵³ Promotional material is available at <http://www.richnet.net/capware/>

⁵⁴ Promotional material is available at www.sunburstonline.com:80/lplobby.html

⁵⁵ Promotional material is available at <http://www.superschoolsoftware.com/Portfolio.html>

⁵⁶ Promotional material is available at <http://www.stardata-usa.com/port/brochure.html>

⁵⁷ Promotional material is available at <http://www.solutions.ibm.com/k12/solutions/tools/svassess.html>

⁵⁸ Complete information about the Online Learning Record is available at <http://www.cwrl.utexas.edu/~syverson/olr/contents.html>

of prior and emerging experience, and critical reflection. The Learning Record provides a way of accounting for learning that is richer and more meaningful than standardized testing, yet provides more consistency and comparability across student populations than conventional grading. The Learning Record is based on an 8-page document which provides a format for gathering information about a student's development in reading and writing from diverse sources over the course of the school year. It is an open record of achievement, accessible to students and parents, maintained and monitored by the teacher for signs that students are moving toward agreed-upon goals and standards.

At Pepperdine University, students compile personal portfolios of school work: quizzes, tests, essays, speeches and focus group audio/video tapes. The work is digitized in a variety of media and compiled onto a CD-ROM for each student. The portfolios have been used for student development, long-term student assessment, and archiving. The goals of the CD-ROM Student Portfolio Project⁵⁹ were to create an assessment database, faculty development, student learning enhancement, and institutional leadership.

The "K" Portfolio at Kalamazoo College⁶⁰ generates an electronic document that provides students with a medium to:

- clearly articulate and track accomplishments in and outside the classroom;
- draw connections among their experiences and achievements;
- record experiences they might otherwise forget or undervalue for later inclusion in a resume or presentation for employers or graduate schools;
- increase their levels of self-understanding and confidence;
- see patterns emerging in their areas of study and interest, which will help them take fuller advantage of their opportunities at Kalamazoo College and elsewhere;
- bring a greater clarity of purpose and a higher level of motivation to the classroom;
- demonstrate their competencies and capabilities as they pursue internships, leadership positions on campus and in the community, and field-based study or research experiences;
- demonstrate competency with a wide range of computer-based and multimedia technologies;
- be more proactive than reactive in designing their educational plans and in pursuing post-graduate opportunities; and,
- be able to better substantiate their decisions and choices.

Beginning with the Class of 2000, students will be required to create "K" Portfolios in their first year and to update them at least once a year in order to graduate. The first class affected by this new requirement underwent explanatory and training workshops in late September, 1996.

Examples of EP's in the adult learning and workplace training system include the following.

CHEST / Lotus National Passport for Learning (for learning to use Lotus SmartSuite and Lotus eSuite) is available to Lotus customers and users in the UK.⁶¹

The Portfolio Builder and Assessment System⁶² is an adaptable software tool designed to promote the use of portfolio development as a means of achieving recognition for learning and action planning. An individual builds a portfolio that includes Individual Learning Profile, Career Goal and Action Plan. As a commercial product/service,

⁵⁹ Information on the CD-ROM Student Portfolio Project is available at <http://www.cdrpp.pepperdine.edu/>

⁶⁰ Information on the K Portfolio is at <http://www.kzoo.edu/pfolio/description.html>.

⁶¹ Information available at <http://www.chest.ac.uk/software/lotus/national/overview.html>

⁶² Promotional material is at <http://www.jmjgroup.com/>

individuals have access only through training projects; however, it is intended to be made available on CanLearn Interactive.

On the web site of the Open Learning Agency, an individual can create a personal skills portfolio with the Self-Assessment Tools.⁶³

In the employment environment, an individualized professional portfolio is generally a collection of artifacts designed to celebrate and reflect achievements.⁶⁴ The following are examples and advice surfaced in an extensive on-line literature search.

In the arts community, portfolios have been a common, established method of seeking work. The "world's first global, interactive advertising portfolio" for photographers, illustrators, graphic designers, industrial designers, advertising agencies, animators, multimedia artists, art directors and copywriters contains numerous examples of electronic portfolios.⁶⁵

Because portfolio assessment of student learning is relatively established practice in the education system, it is understandable that the concept would be extended to pre-service and incumbent teachers/professors/instructors. A commercial product called Teacher's Portfolio⁶⁶ helps a teacher create and maintain a professional portfolio, and professes to serve needs for an alternative, authentic, standards-based portfolio evaluation of pre-service and in-service teachers. Samples of electronic teaching portfolios can be found.⁶⁷

Developing Your Professional Portfolio⁶⁸ provides a prototype portfolio using readily available technologies in order to showcase achievements through a range of media. It contains a design checklist, recommended content, and steps to creating an electronic portfolio with pictures, sound and/or video on a word processor, posted to the Internet and/or saved on CD ROM.

The Canadian Association of Career Educators and Employers has provided advice on how to prepare a resume for scanning and internet retrieval (e.g., clarity of text and layout, typeface, key words)⁶⁹ and, of more relevance here, advice on how to create a Personal Profile.⁷⁰ The steps include (1) brainstorming a list of Quick Skills, then (2) creating a Skills Table listing where/how the skills have been acquired. No further details are provided.

Similarly, advice on the design of a Personal Profile has been based on the "What Color is Your Parachute" series of books.⁷¹ The advice includes the steps of thinking about one's needs, interests and skills; then using the profile to, e.g., compare oneself against a job profile using PROSPECTS (a computer-based careers choice package used in the UK).

⁶³ On-line at <http://www.ola.bc.ca/pla/resources/tools.html>

⁶⁴ Taken from an Australian website: *Women @ the cutting edge* at <http://www.eu.rmit.edu.au/wace>

⁶⁵ Portfolios Online is at <http://www.portfolios.com/cgi-bin/login.pl>

⁶⁶ Information is available at <http://www.aurbach.com/>

⁶⁷ A sample of electronic teaching portfolios is on-line at http://www.curry.edschool.virginia.edu/curry/class/edlf/589_004/sample.html

⁶⁸ Online at <http://www.eu.rmit.edu.au/wace>,

⁶⁹ At <http://www.cacee.com/options/scan.html>

⁷⁰ At <http://www.cacee.com/options/thrills.html>

⁷¹ Steps are outlined at <http://www.damtp.cam.ac.uk/user/careers/students/guide/thyself.htm>

In conclusion, the learning record is a concept that emerged at the national level in Canada from work on Prior Learning Assessment and Recognition and from various education/training reform initiatives, e.g., inter-provincial transferability of academic credits and credentials, attempts to create a lifelong learning culture, and workplace literacy enhancement. To some, a learning record is the outcome of a PLA/PLAR process, accounting largely for non-formal and informal learning as a balance to formal learning credits and credentials. To others, the learning record is a skills portfolio, an inventory of technical, vocational and professional skills acquired either in formal training, on-the-job training or work experience. To yet others, it was an individual's record of formal learning – e.g., university or college for-credit and perhaps non-credit courses -- from any number of teaching institutions in any number of locations. The learning record, as it is conceived of here, is a combination of all these things, based on the various benefits to each conceptualization.

3. RECOGNIZING AND MANAGING LEARNING

The basis for interest in PLA/PLAR, the assessment and recognition of non-formal and informal learning, skills portfolios and transferable credits/credentials is expediency. Expediency in the areas of human resources development and management, from the individual to the national level, is needed to address the challenges presented by the emerging Knowledge-based Economy, skills shortages, education/training reform, and structural unemployment. For example, in their analysis of the International Adult Literacy Survey (IALS) results, Human Resources Development Canada (HRDC) and Statistics Canada have concluded “that the ‘new’ economy requires workplace arrangements that empower employees to make workplace decisions and challenge them to use existing skills and develop new ones.”⁷² The Organization for Economic Co-operation and Development (OECD) has deemed it important that nations concern themselves with how and why they invest in and use human capital because a commitment to improving the skills of citizens is one of the principal means for dealing with economic uncertainty. The OECD has concluded that improvements to the systems of human capital acquisition, measurement, accounting and valuation are key factors in helping a nation’s firms to compete in the globalized economy. “Investment in education and training helps form the human capital – the skills and abilities – that is a vital element in assuring economic growth and individual advancement and reducing inequality. It is an important element in combating unemployment and social exclusion.”⁷³

The implementation of Human Capital Accounting (HRA) is an OECD-recommended means of improving the efficiency of human capital investment and utilization. The concept of HCA has been explored and developed by the OECD as a means to understand and implement the necessary adaptations individuals and nations must make to measure and utilize knowledge assets – knowledge resident in human beings – in relation to economic performance and prosperity. In 1996, the OECD concluded that public policy must focus on the development of better signals for competence validations, valuation, accounting and financial reporting. Firms had begun to think of employees as investments rather than costs, and as the cost-to-investment-based thinking evolved, the transition continued towards full accounting of human capital investments as assets that produce returns over an extended period of time. The OECD publications *Measuring What People Know: Human Capital Accounting for the Knowledge*

⁷² *Employee Training: An International Perspective* (Kapsalis, 1997), p. 9.

⁷³ *Counting Human Capital* (Healy, 1998).

*Economy*⁷⁴ and *Human Capital Investment: An International Comparison*⁷⁵ extend the treatment of physical capital to human capital in a discussion of knowledge production, diffusion and consumption in light of the disciplines of economics, accounting and education.

Human capital is defined as *the knowledge that individuals acquire during their life and use to produce goods and services or ideas in market or non-market circumstances*.⁷⁶ According to the OECD, this definition of human capital is non-committal about the source, nature or validation of embodied competences; and helps to focus on two issues: (1) the productive capacity arising from knowledge; and (2) the utility of improving the methods for assessing the productive capacity of human capital. HCA is a method of systematically identifying, measuring and presenting information about the human resources of an organization. It is related to and sometimes confused with such other concepts as: intellectual capital,⁷⁷ intellectual potential,⁷⁸ knowledge management, Human Resources Accounting (HRA), Human Capital Management (HCA), intangible investments⁷⁹ and/or intangible assets – which range from the intellectual property rights of patents, trademarks, copyright and registered design through contracts; through trade secrets and public knowledge such as scientific works; to the people-dependent or subjective resources of know-how, networks, organizational culture, and the reputation of product and company.⁸⁰ FuturEd has concluded that the concept of HCA is also directly related to human resources management in the knowledge economy, lifelong learning, PLA/PLAR, electronic LMI management, and the digital learning record.

3.1. Human Capital in the Knowledge-based Economy

In the Knowledge-based Economy, simple capitalism is replaced by intellectual capitalism.⁸¹ Stewart says: “Thinking and invention are the assets upon which knowledge work and

⁷⁴ *Measuring What People Know: Human Capital Accounting for the Knowledge Economy* (OECD, 1996)

⁷⁵ *Human Capital Investment: An International Comparison* (OECD, 1998)

⁷⁶ *Measuring What People Know: Human Capital Accounting for the Knowledge Economy* (OECD, 1996), p. 22.

⁷⁷ Intellectual capital is proprietary information and knowledge that lowers costs or increases customer value; it is human capital plus structural capital such as databases and documents. Examples are patents, trade secrets, copyright protection, trademarks and contracts. An “intellectual capital” reading list is available at <http://www.icmgroup.com/biblio.html>

⁷⁸ *The Austrian Approach to the Measurement of Intellectual Potential* (Schneider, 1999) at <http://users.austro.net/measuring-ip/OPapSchneider/theoreticalframework.html>

⁷⁹ Intangible investments, in this context, include research and experimental development, training, organizational change, marketing and software.

⁸⁰ Hall, R. 1992. The Strategic Analysis of Intangible Resources, *Strategic Management Journal*, Vol. 13.

⁸¹ *Brain Power: Who Owns It...How They Profit From It.* (Stewart, 1997) at http://www.pathfinder.com/@_@VMxyFQcAT*x9@7yn/fortune/1997/970317/cap.html

knowledge companies depend....The question for companies is how to acquire as much human capital as they can use profitably. Human capital grows two ways: when the organization uses more of what people know and when more people know more stuff that is useful for the organization. The electronic learning record is a means by which organizations can assess what people know and can do, i.e., the intellectual or human capital assets, and then use it to maximum advantage. "To use more of what people know, companies need to create opportunities for private knowledge to be made public and tacit knowledge to be made explicit." Clearly, the first step is to inventory the private knowledge and tacit knowledge that individuals hold. Interestingly, Stewart notes that the paradox is that, when individuals are able to capture for themselves almost all the value of their human capital, they often become independent contractors.

3.2. HCA to Promote Lifelong Learning

The concept of HCA is related to lifelong learning and the need to develop a lifelong learning culture. On the one hand, HCA addresses the challenge to the reliance on credentials for employment and advancement. There is a growing body of literature about rampant credentialism and the dubious utility of some academic credentials. The OECD acknowledges that "usually education certificates are used to measure actual competencies, but these achievement certificates are imprecise at best."⁸² The OECD foresees a situation where "any new investment in learning will be undertaken with more attention to type, method and content. In other words, quality of education will be more important than quantity."⁸³ The learning record facilitates, perhaps encourages, the acquisition and recognition of skills and knowledge outside the formal credential-acquisition system. On the other hand, while individuals, indeed all of society, are urged to adopt lifelong and life-wide learning, there is an acknowledged lack of incentives other than formal credentials. The OECD asserted that individuals need to be able to see their investments in skill formation as a lifelong commitment to building assets. It has been hypothesized that a learning record, by accurately reflecting an individual's acquired skills and knowledge, could increase access to training, appropriate employment and/or career advancement – ostensibly incentives for some. Fundamentally, the most basic incentive is lacking: acquired skills are not considered to be assets by banks. The OECD poses the rhetorical question: "in capital markets, will banks and other lenders recognize human capital stocks and acquisition in ways that reflect asset values?" The current answer is "no;" and fewer

⁸² *Measuring What People Know: Human Capital Accounting for the Knowledge Economy* (OECD, 1996); p. 20.

⁸³ *Redefining Tertiary Education* (Wagner, 1998) at <http://www.oecd.org/publications/observer/214/article4-eng.htm>

adults are willing to invest in human capital acquisition – e.g., advanced degrees – when other investments are considered to be tangible assets. As noted by the OECD, the continuing emphasis on lifelong learning reinforces the need to reform the information and decision-making mechanisms that determine learning acquisition choices. They recommend that “reforms should take into account, for individuals, their lifetime pattern of investment in human capital, and for institutions, the existence of multiple distinct learning pathways and the need for mobility and linkages between them.”⁸⁴

3.3. HCA to Promote Return-on-Investment

The concept of HCA is also directly related to “return-on-investment” in education and training, and education/training reform. The OECD notes that it is common practice in most countries, industries and firms to make budgetary decisions on funding for compulsory schooling based on the assumption that the social and economic benefits outweigh the costs; however, in many areas, the requirements of the knowledge-based economy increase the pressure to improve the effectiveness and efficiency of human capital formulation. It is concluded that “a variety of problems are posed by the predominant methods for assessing human capital that are geared to the needs of an education system that extracts fees by controlling credentials as opposed to a system where the output potential of human capital is measured on the basis of competence to produce regardless of how much knowledge was acquired.”⁸⁵ Further to that, “one of the obstacles to measuring the output potential of human capital is the segmented and oligopolistic character of educational and professional certification... rooted in the historical power of universities, guilds and professions to forbid the utilization of acquired competences without certification...largely explained as ways of extracting rents from investors in human capital. The traditional state-sanctioned assertion of property rights over the knowledge acquired when people invest in human capital is one way of resolving the paradox of knowledge as a public good and as inalienable from the person in whom it is embodied.” At the heart of this paradox is the reality that human capital must be embodied in humans while rents that accrue from the utilization of that knowledge in production must be shared in order to finance learning institutions. The OECD is clear that new forms of human capital accounting are needed.⁸⁶

⁸⁴ OECD, 1996; p. 73.

⁸⁵ OECD, 1996; p. 47.

⁸⁶ Human Capital Investment: An International Comparison. (OECD, 1998)

3.4. HCA and the Assessment of Acquired Learning

The link between HCA and ROI leads to the connection between HCA, PLA/PLAR and learning records. According to the OECD, PLA/PLAR offers to individuals reduced risk of investing in human capital. For firms, it makes HCA simpler and less expensive. For governments, there is the incentive of more efficient expenditure allocation during times of fiscal pressure. PLA/PLAR “renders knowledge acquisition methods neutral,” giving all forms of learning equal chances at being validated.⁸⁷ Imbedded within HCA, PLA/PLAR has the general impact of reducing the transaction costs both for individuals seeking to invest in human capital or enter into a contract to rent their skills and for the firm’s internal and external labour market decision making. Using PLA/PLAR to reduce the cost and duration of incremental human capital investments relative to an individuals existing asset base is a contribution to efficient allocation of individual resources and an investment incentive that reflects rates of return to recurrent education. To reap the benefits of PLA/PLAR and human resources accounting practices, the OECD asserts that the state should:⁸⁸

- strengthen market valuation of training and competences, develop a system for measuring competences designed to favour modular and continuing learning, and “reduce the lumpiness of investment imposed by the current certification system”;⁸⁹
- encourage and/or capitalize firms to collateralize and amortize knowledge;
- give clear title to well-defined competences through universal institutions for assessment and broadly recognized mechanisms for financial accounting;
- generate transparency in labour contracting by revealing employee assets and employer benefits;
- validate alternative learning acquisition.

Based on the work of Drucker and Reich, the OECD concludes that individuals, firms and governments are making choices and using resources to invest in the acquisition of human capital based on signals or institutions developed under significantly different economic conditions; and that it might be useful for them all to consider the role of improvements to the financial accounting and reporting of training and labour force qualifications as an innovative, supportive or even alternative method of enhancing active labour marker policies. They should consider new institutions and regulations that (1) improve the transparency and certainty with which human capital is valued for all new members of the labour market, and (2) establish the collective parameters and guard the general interest when it comes to defining competences, assessment methods and recording conventions based on processes that are simultaneously inclusive,

⁸⁷ OECD, 1996; p. 82.

⁸⁸ Ibid., p. 83-84.

⁸⁹ Ibid., p. 82.

decentralized, and based on a common general framework.⁹⁰ “Measuring and recording competence acquisition, in order to improve human capital information and decision-making, requires the development of low cost, universally accepted, and labour market relevant systems for defining and assessing knowledge acquired for use in the workplace. They need to (1) accommodate entry-level as well as adult learners; and (2) balance the competing interests of employers, employees, educators, professional associations, citizens, equity-seeking groups, and different regions.

3.5. HCA and the Future of Labour Relations

The concepts of HCA and learning records is also related to labour law, the challenge being to apply contract law to investments in human capital. For example, a firm may be encouraged or required to invest in training, but the reciprocal obligation of the employee to acquire additional human capital is not equally enforceable. The question is posed: “will firms negotiate contracts that recognize the achieved and validated competence assets of workers?” The OECD concludes that a method of overcoming this problem is to provide market type incentives to labour by attaching value to the acquisition of human capital, i.e., by enabling both employers and employees to internalize the costs and benefits of investment in human capital acquisition.

In this respect, HCA and learning records are also linked to the new forms of accounting for production and consumption, e.g., the United Nations Human Progress Indicators and the assessment of women’s unpaid work. Since most OECD countries do not provide formal recognition of human capital as an asset in financial accounting and reporting systems at any level, individuals find it difficult to establish readily accepted records of the asset value of their skills beyond the conventional certificates of human capital acquisition.⁹¹ It has been argued that the measurement of human capital is untenable because human-embodied knowledge is non-physical, non-appropriable, unmeasurable, and inherently incompatible with the conventions and institutions that guide the day-to-day transactions recorded by financial accounting and reporting. However, human capital is an asset – an economic resource controlled by the entity with an objectively measurable acquisition cost – by the following four accounting conditions:⁹²

it is measurable by the output potential of specific competences and is, therefore, predictable;

the fruits of investment in human capital can be appropriated by the investor as they accrue;

⁹⁰ Ibid., p. 81.

⁹¹ Ibid., p. 39.

⁹² Ibid., p. 44.

the cost of buying or “renting” can be objectively determinable; and

day-to-day transactions recognize estimates of the value of the output potential of human capital investments.

The concept of a Learning Record is congruent with what the OECD set out as one of three means of measuring human capital:⁹³ testing people for their competencies. A second means is to look at the cost of acquisition of certified knowledge; however, “in most countries, a large proportion of diplomas, degrees and other certificates are fairly general in nature and often fail to provide any precise assurance of particular competences.”⁹⁴ A third means involves estimating productivity based on such achievement indicators as personal income, job security, occupational status, and past references; however, this depends on the flawed assumption that competence is accurately reflected by labour market status. The OECD concluded that not enough consideration had been given to the first measure and that “without a sanctioned or generally accepted financial record, the costs and benefits of human capital acquisition and utilization cannot become fully transparent and predictable elements of monetary transaction-based information and decision-making systems.”⁹⁵

3.6. Issues of Measurement and Validation of Learning

Validation of competences is the most crucial issue. “Without adequate measures of acquired competence, there is little incentive for individuals or firms to collect or develop high quality human capital information... and without practical recognition of human capital as an asset, there is little incentive to establish even inexpensive high quality systems for the identification and validation of competences.”⁹⁶ This means that, in part, efforts to implement PLAR and occupational skill standards must be accompanied by efforts to implement human resources accounting or they serve to perpetuate the status quo in training than to promote the necessary changes for the knowledge-based economy. In aid of developing adequate measures, an Austrian scholar has proposed that “measures should on the one hand be thoroughly researched but on the other hand immediately at management’s disposition. They should be easy to remember and few, in order to be an applicable controlling tool and at the same time reflect the whole body of new theories on organizational learning, knowledge management and value generation. They should be as reliable and unbiased as possible and still predict future success based on soft factors

⁹³ Ibid., p. 21.

⁹⁴ *Education and the Economy in A Changing Society* (OECD, 1989); p. 34-35.

⁹⁵ OECD, 1996; p. 37.

⁹⁶ Ibid., p. 51.

such as culture and stakeholder satisfaction. Last but not least, they should be accessible without high administrative costs and suited to provoke decisions that lead to higher profits.⁹⁷

In this regard, HCA is related to reforms in assessment processes. Traditional assessment has been limited, e.g., to norm-referenced, standardized tests; and new forms of assessment include authentic, embedded, competency-based, standards-based and/or “alternative” assessments. Competence-based assessment, a fundamental of human resources accounting, provides a framework for adult learning and reflects a shift in the workplace away from the simple connection between the well-defined, stable skills required for production in the manufacturing era and the cognitive/behavioural competences instilled by the compulsory educational system. In all OECD countries, there is a trend towards more socially organized and explicit systems for recognizing acquired competences, as reflected by the PLA/PLAR literature. As well, there seems to be general recognition of the need to improve incentive structures surrounding human capital investment and utilization.

3.7. The Implementation of HCA and Learning Records

Finally, a nation-wide effort may be required. The OECD notes that firms do not have the capabilities or financial means to pursue assessments that are often imprecise or expensive; nor do they have the negotiating experience to allow them to enter into contracts that explicitly validate the estimated value to the firm of a person’s acquired skills. “In the absence of nation-wide efforts to establish appropriate and affordable human capital information and decision-making systems, firms are unable or unwilling to develop such systems on their own are likely to suffer from lower productivity growth and reduced ability to compete because they will be less effective and efficient in acquiring and using human-embodied knowledge.”⁹⁸ To this end, the OECD acknowledged PLA/PLAR as a most promising area of innovation, referring to it as “achievement-based evaluation of human capital accumulation.” They note that “explicitly negotiated and transparent links between competence validation and market validation have not yet been made; however...there is a new and growing potential to turn measurement into valuation as new active labour market policies are combined with reform of educational financing and closer ties between learning institutions and the workplace.”⁹⁹

⁹⁷ *The Austrian Approach to the Measurement of Intellectual Potential* (Schneider, 1999) at <http://users.austro.net/measuring-ip/OPapSchneider/theoreticalframework.html>

⁹⁸ OECD, 1996; p. 54.

⁹⁹ *Ibid.*, p. 59.

3.8. Next Steps

In conclusion, the hypothesis that there are direct links between HCA, lifelong learning, PLA/PLAR and electronic learning records is to be tested within this project. The purpose of this research project is to focus on the potential advantages of a learning record to an individual in terms of access to employment, training and advancement. The outcomes of the project may be a means by which to determine whether or not electronic learning records are of value to individuals, to employers and to society in the context of changes in learning needs and work opportunities.

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