AUTONOMOUS LEARNING STRATEGIES IN THE KNOWLEDGE ECONOMY

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This paper is a report on the findings of 2-year investigation sponsored by the Canadian government (HRSDC) in a program titled, "Essential Skills for the Workplace". The specific focus of our research was on one particular set of skills that we called the "development of autonomous learning strategies in the workplace".

Learning strategies that are used by employees to upgrade and maintain their professional competencies remain largely unexplored, despite recent research in the area of autonomous and self-directed learning. Our purpose is to determine how such autonomous learning strategies are implemented in the workplace. Using a qualitative methodology, we have examined how and why people learn in the workplace in the absence of formal training.

Current developments in the contemporary workplace are characterized by technological advancements, workforce mobility and increased competition. These things require high performance, cost reduction and profit maximization. One important casualty of cost-reduction policies in the workplace has been the reduced investment in formal training.

Today's workplace is characterized by rapid change and constantly renewed pools of knowledge. It is widely recognized that training is often outdated before it can actually be implemented, and organizations are now turning to self-defined cultures of "self-directed learning" to maintain their edge on competition. In order to get a closer look at this phenomenon, we focused our research on organizations that could readily be associated with the emerging "knowledge economy" in Canada. Our findings identify capacity-building opportunities, but also serious deficiencies concerning the perceived and actual ability of organizations to implement autonomous learning practices.

The problem of workplace expectations

There are two trends of publications that constitute the foundation for this research. The first involves research into workplace skill building and the assessment of what constitutes "basic" skills for the workplace. The *Conference board of Canada* (2009) has published rather extensively on these two topics, the importance of which was highlighted by the *International literacy surveys* (1994; 1996; 1998). In Europe, the situation was assessed by umbrella organizations such as the Commission of the European Communities (1994).

The second thread of literature relates to the phenomenon of autonomous learning itself. Early researchers such as Tough (1965) and Knowles (1980) had been setting the bases for the emerging concept of "self-directed learning". It was later picked up by the likes of Marsick & Watkins (1990), Candy (1991), Long (1992), and Carnevale et al. (1992). Today of course, the field of SDL is replete with research data and findings that cannot possibly be enumerated here.
Contemporary organizations, especially in emerging technical sectors, are becoming full-blown educational environments (Field, 2000; Marsick and Watkins, 2001). These organizations constitute what has been called the *knowledge economy*, which represents a fast-growing sector. In this environment, the "worker-learners" are expected to master competencies that are related to the acquisition and application of new knowledge. The workplace has become the site where people create, process, analyze, evaluate, apply and manage a large body of knowledge that is in constant evolution. Technological innovation and workforce mobility entail that employees must become effective, *just-in-time*, continuous learners. One interesting implication is that in order to quickly acquire renewed professional competencies, employees must first develop strategies of *how-to-learn* (Jasmin & Robert, 1992). This core competency, or "essential skill" (HRSDC, 2008), is the focus of this study. We consider learning-how to learn a distinct form of cognitive functioning, much in the same way as problem-solving or decision-making.

During the 1990's, research in the area of autonomous learning was widespread and several authors have demonstrated the growing importance of the phenomenon in the workplace (Carnevale, Gainer & Metzer, 1992; Straka, 2000). One author, Carré (1992) states that education and training are no longer expected to provide a completed system of knowledge, but rather to establish some bases and methodologies enabling individuals to develop, throughout their lifetimes, adaptive learning strategies. Self-directed learning is now considered a promising tool to deal with the complex requirements and changing needs of persons and organizations.

Continuous learning and competency development
In the context of the rapid evolution of knowledge, education and training have been the object of a vast global consensus (UNESCO, OCDE, CEE, etc.) Education and training are considered a *program for the future* (Field, 2000). Recurrent training is central to the success of organizations, but remains inadequate when it comes to solving emergent – and heretofore unknown and therefore unpredicted – problems (Marsick and Watkins, 2001). For some time now, the literature has been replete with acknowledgements that it is no longer possible to provide at the outset all the theoretical and practical knowledge that employees will need for their career (CEC, 1994). Self-directed learning therefore appears as a reasonable alternative to maintain an up-to-date knowledge base. This means that knowledge acquisition methodologies somehow must be developed by individuals, along with quite complex and varied adaptive strategies.

What is autonomous learning?

There is a good deal of terminological uncertainty and conceptual ambiguity surrounding the notion of autonomous learning. We are presented with terms such as autodidaxy, informal, autonomous or self-directed learning, etc. This last term, self-directed learning (SDL) appears to be the most widely used, but we also encounter the likes of self-teaching, self-instruction, self-learning, self-regulated learning, etc. Tremblay (2001) reported at least 10 currently used expressions referring to autonomy in learning.

Straka (2000) contends that 'Self-directed learning takes place when, assuming a learning need, or a learning goal, the interaction between learner and subject may be characterized as 'interest' and where the learner applies 'strategies' in order to acquaint himself with the content, 'controls' the application of these strategies and subjects his achieved learning result to an evaluation". This is more or less consistent with the sequence of planning -implementation -evaluation largely recommended in teacher-training programs. We will see, however, that real-life self-directed learners function with quite a different set of algorithms.

Methodology
We set up a series of informal, semi-guided interviews with 28 employees in organizations readily identified as "knowledge economy" companies. These included economic sectors such as financial services, aerospace, medical services, social work, crime prevention and pharmaceuticals. The interviews were conducted over a period of 2 years. All interviews were transcribed and analyzed in order to identify patterns, trends and emergent problems.

Cognitive strategies

Planning. Several tasks performed by self-directed learners are normally those devolved to teachers and trainers in formal and non-formal situations. For example, after analyzing one particular situation, the learner must formulate as precisely as possible some specific learning goals. In other words, a professional problem must be re-framed as an educational one. One frequent example in the financial sector is that the professional is expected to expand the selection of products that the company offers. This will inevitably imply some learning activities, but which ones? In the learning economy, professionals are often left to their own decisions – and to their own devices – when it comes to expanding their knowledge base.

Many strategies were identified, among which a few of questionable value. For instance, the tacit anticipation of self-directed learning in the workplace frequently leads to an increased workload that is undervalued by the employer. There seems to be a widespread expectation that employees will "know", without much attention being given to the actual provenance of this "knowledge". The organizational culture of SDL advocated by management gurus in recent years seems to have backfired somewhat. Several of our respondents declared being left with no other choice than to plan for some extra learning time on evenings and weekends. We have also encountered two "counter-strategies" used to compensate for this new requirement. The first one consisted of evaluating the magnitude of a particular learning task, and then applying a time-management approach in order not to go over schedule. The other was simply to adhere to a severe goal structure in order to avoid learning anything except what was absolutely necessary. Some respondents who applied neither of these survival strategies found themselves overworked and demoralized by the added burden. The choice of when and where to learn seem to be important cognitive manifestations. Respondents admitted that the demand for workplace knowledge acquisition is rarely accompanied by workload reduction or the availability of any additional resources.

Using resources. The task of identifying and selecting learning resources is another area that is normally reserved for teachers and trainers. On several occasions, our respondents mentioned the importance of being able to complete library or database searches within an acceptable deadline. We have noted two different approaches to the search for information. Some respondents found it more convenient to make multiple on-line searches using different key words, and then collecting the first few hits for each one. This could be called the "horizontal" method of data searching. Other respondents preferred to approach the larger bulk of data derived from a first general search, and to keep digging into this information until useful facts or figures were found. This is the "vertical" search method which is recommended by information specialists (British Library, 2008).

The use of the library is still very popular among self-directed learners in the workplace. However, those respondents who reported using the library did so for rather narrow reasons. Because of the perception that learning is an additional burden on the workload, employees do not waste time gathering information on larger-picture or other associated issues. They would rather "stick to the essential" and to "read selectively". It appears that the Dewey decimal system, which was conceived to ensure physical contiguity between conceptually related information, carries little appeal for the employees of the knowledge economy. They would rather entrust their learning to popular search engines such as Google or Wikipedia, on-line dictionaries and databases, seemingly without acknowledging the very real conceptual limitations of these tools.

Metacognitive strategies

Promoting self-direction. For several respondents, it seemed important to develop a positive attitude towards autonomous learning and to see self-direction as a viable means to reach their professional goals. In professional domains where the knowledge base is in constant evolution, employees are expected to learn without anyone's help or counsel, and most often without any extra resources being made available. This situation often results in an initial resistance among employees, especially in organizations that are accustomed to traditional training in small groups accompanied by a professional trainer.

There is no proper method to "teach" self-directed learning, but we can say the fact of finding oneself in a situation where such learning is *expected* – in other words where it is considered inevitable – all but guarantees a change in perspective. This adjustment brings about a kind of *leap* into the heretofore unknown world of self-directed learning. Following this conceptual break, respondents reported having developed a renewed self-confidence when faced with the prospect of autonomous learning.

Trial and error remains the most frequently mentioned learning strategy among respondents. It must be noted however that it is a strategy that entails wide-ranging and varied processes. In fact, trial-and-error can de defined as the reflection process that follows an oversight or a failure of some kind. This reflection is idiosyncratic, in the sense that it is rarely transferable from one situation to another. Consequently, we classify trial-and-error as a "meta-cognitive strategy", ore perhaps more accurately as a "cognitive meta-strategy". Furthermore, it should be noted that trial-and-error is not the exclusive domain of learning on one's own. Both the trials themselves, and the *post-mortem* analyses of what went wrong, can be delegated or shared in small learning groups.

Affective strategies

Most employees have not been accustomed in their lives to being told what to learn without being also told how to do it. Consequently, this situation can lead to a certain uneasiness. Our respondents have been rather outspoken in this regard, using expressions such as "extreme apprehension" and "anxiety attacks". They also reported that these tensions can be managed with the use of certain affective strategies.

We are reminded that it is precisely this initial distress towards the new expectation that is responsible for the epistemic transformation of the self-directed learner. Autonomous learning carries a considerable affective valence for the individual, both as a personal challenge that must be overcome on one's own terms, and as a self-defining test of competence. Teachers and trainers have known for a long time how important it is to value and to apply systems of encouragement in order to support learners in their journey. In a similar fashion, respondents applied specific strategies in order to limit their exposure to discouragement or fatigue during their own learning process.

Some have applied a kind of "inner discourse" or "self-talk" to remind themselves that autonomous learning is a viable option and that one should trust one's innate ability to learn. One consequence of this self-proclaimed confidence is the disposition to "make the jump" by placing oneself in a position where one will have no other choice but to learn, and to learn quickly. One example would be to accept some new responsibilities while knowing that these will eventually entail a steep learning curve.

Another way to keep afloat is to become a "promoter" of self-learning. This means starting up multiple learning projects with the result that the learner is constantly juggling to achieve one learning goal or another. This sheds new light on "multi-tasking" in ICT environments: by carrying out multiple activities simultaneously on multiple fronts, learners increase their odds of success.

With each increase in a learner's capacity for self-direction, new and unknown situations gradually lose some of their menacing features. Respondents have found that they had developed the ability to "remain calm" when faced with unexpected requirements, simply by thinking of their past accomplishments as evidence of their ability to learn and innovate.

Social strategies

Working in groups. Group learning strategies were rich and varied. In one transaction centre, employees had regular meetings to discuss their work, but without a pre-determined agenda. Respondents had discovered that informal chatting could be more productive than a structured meeting, when the explicit goal of the meeting is learning from each other.

Another variant of this group strategy was the introduction in one group of invitations to meetings with employees from another branch. In these meetings employees prepared some questions that they would like to ask their colleague (usually someone with a reputation for being particularly well-informed). In this way, experts working in one location could share their

knowledge with others in another location. The interview format was selected after it was noticed that members derived greater benefit if they were allowed to ask their own questions.

Resource persons. When faced with self-directed learning, it is useful to identify resource persons who can help orient ourselves in our search for knowledge. Most of our respondents did not hesitate to seek out this kind of help. Most often, they turned to someone in their immediate surroundings. Interestingly, this seems to be the norm in knowledge economy organizations. It is very rare that employees seek expertise – either within the organization or outside – from persons with which they are not already familiar. In almost all cases, they turn to a close colleague, a friend or an acquaintance.

We explain this phenomenon in two different ways. It could seem less complicated to approach a colleague rather than to contact a stranger or a hierarchical superior. Easy access would then explain the tendency. We could also surmise that self-directed professionals, who are generally well-prepared to seek information in databases containing information, or *learning objects*, are less well equipped to search among groups of *persons* who are likely to hold the knowledge they seek. In university research circles, it is standard practice to constitute databases containing people's areas of expertise in order to constitute peer-review committees. We are not aware of any database in the workplace that could facilitate this type or search, but it seems obvious that any organization concerned with the knowledge of its members would benefit from creating such a database, at least for internal use.

We have been told by some employees that they voluntarily sought help outside their immediate surroundings in order to hide their embarrassing lack of knowledge in a given domain. The *perceived stigma of not knowing*, although it is understandable, nevertheless remains a barrier to learning. There is a greater benefit to be derived from a culture of openness, where learning needs are acknowledged and supported, rather than dissimulated. One rather startling solution to this problem was found by one respondent. She hired an expert consultant in order to acquire from observation, discussion and imitation what she wanted to learn. This avoided the hassle of consulting with colleagues.

Another interesting social strategy could be called "delegation". Some tasks associated with learning can be delegated to others. For example searching for relevant information, or even conducting trial-and-error sessions, can be carried out by a third party. We could build on this notion and suggest that it is also possible to delegate the search for resource persons who are likely to be of assistance.

Mixed strategies

It seems that we can distinguish two large groups of autonomous learning strategies. First are those strategies that are implemented with the purpose of initiating, sustaining and establishing the value of self-directed learning. In the absence of a teacher or a trainer who supports learning efforts, the learners are responsible for their own determination in pursuing learning goals. This is what could be called the *conative* dimension of learner autonomy.

The second group of autonomous strategies is concerned with the actual learning process, namely those tasks related to the selection of resources, scheduling of learning tasks, monitoring levels of performance, self-regulation, in short the micro-management of the act of learning. This is what could be called the *algorithmic* dimension of learner autonomy.

These two dimensions (conative and algorithmic) are supported by a number of strategies that fall into the "mixed" category because they are composites belonging simultaneously in several of the categories described above (cognitive, social, etc.)

Conative aspects of autonomous learning and their strategies

Initiative	Get the process started. Resist inertia and stay focused on goal.
Motive	Learning goals are based on real-life goals called *motives* which must remain explicit at all times.
Motivation	Take precautions to avoid fatigue and exhaustion. Use self-talk to break down overall goals into smaller ones.
Context and transitions	Life transitions stimulate learning endeavours inasmuch as they are considered positive.
Social environment	Learner cultivates relations that have a beneficial effect on learning.
Past experiences	Learner reflects on past learning experiences.

Algorithmic aspects of autonomous learning and their strategies

Sequencing	Learner must determine in which order to complete the learning tasks.
Pacing	Learner must determine how quickly / slowly to conduct the learning activities.
Goal-setting	Professional goals must be transformed into learning goals.
Selecting resources	Learner must locate texts, objects and person that will assist in the learning process.
Follow-up	Some benchmarks must be established to monitor the progress of the learning.
Evaluation	Learning must be validated in terms of their usefulness, and in terms of their *degree* of success.

Conclusions and recommendations

Autonomous learning, under its various guises and designations, has become a inescapable social phenomenon. It must be acknowledged by anyone interested in education, training, orientation or professional integration. Its role in the development of basic skills and technical competencies is widely recognized, as evidenced by the growing body of literature and the number of conferences devoted to it worldwide. Overall, it is considered a promising area of research and application for universities, schools, the workplace and leisure activities. This research points out that autonomous learning has at best a good side and a flip side. On the one hand, it offers the employees an effective tool to respond to the new requirements of the knowledge economy. On the other hand, the tacit expectation of learning at all costs is a source of anxiety and confusion among workers, simply because they cannot be expected to be experts in the area of self-directed learning.

We can now even suggest that there is a race going on for the control of SDL by various political and economic actors, which is intensified by the rise of new technologies and the globalisation of the great economies of the world.

In the descriptive / analytic domain, our research has identified and described 5 categories of autonomous learning strategies. The strategies are cognitive, affective, metacognitive, social, and mixed. Overall, each strategy is comprised of conative components (why we learn) and algorithmic components (how we learn).

In the axiologic / normative domain, we found a generalized lack of preparedness for autonomous learning, both on the part of management who expect it, and of employees who ultimately are responsible for it. Learner autonomy is increasingly the province of competition between economic and political actors who respectively anticipate it or promote it, without much regard at times for the learners themselves.

References

British Library (2008). *Information behaviour of the researcher of the future.* 11 January 2008. Retrieved online.

Candy, Philip (1991). *Self-Direction for lifelong learning*. San Francisco: Jossey Bass.

Carnevale, P.A., Gainer, L. J. et Meltzer, A. S. (1992). *Workplace Basics: the essential skills employers want.* San Franscisco: Jossey-Bass.

Commission of the European Communities. (1994). Competitiveness, employment, growth. Luxembourg : Office for official publications.

Conference Board (2009). *Education and learning.* http://www.conferenceboard. ca/topics/education/default.aspx

Field, J. (2000). *Lifelong learning and the new educational order*. Stoke on Trent : Trent ham Books.

International literacy survey (1998). http://www.statcan.gc.ca/cgi-bin/af-fdr.cgi?l=eng&loc=http://www.statcan.gc.ca/dli-ild/meta/ials-eiaa/1998/guide-eng.pdf

Jasmin, G. et Norbert, L. (1992). L'éducation permanente et la formation continue dans le contexte canadien. *La formation professionnelle continue au Canada*. Contribution à une étude de l'OCDE sur l'enseignement supérieur et l'emploi. Rapport du Canada.

HRSDC (2008). Essential skills for the workplace. http://www.hrsdc.gc.ca/eng/workplaceskills/essential_skills/general/home.shtml

HSRDC Développement des ressources humaines Canada. (2002). *Le savoir, clé de notre avenir : le perfectionnement des compétences au Canada*. Hull, Québec

Knowles, M.S. (1980). *The Modern Practice of Adult Education*. Chicago: Associated Press, Follet Publishing Company.

Long, Huey B. (1992). Philosophical, Psychological and Practical Justifications for Studying Self-Directed Learning. In Huey B. Long & Associates (eds): *Self-Directed Learning: Application and Research.* Oklahoma Research Center, University of Oklahoma.

Marsick, V.J. et Watkins, K.E. (2001). Informal and incidental learning. *In* S.B. Merriam (dir.). *The new update on adult learning theory* (p. 25-34). San Fransisco : Josey-Bass*.

Marsick, V.J. et Watkins, K.E. (1990). *Informal and incidental learning in the workplace.* London : Routeledge.

Commission of the European Communities (1994). *Competitiveness, employment, growth*. Luxembourg : Office for official publications.

Straka, G. A. (2000). Conceptions of self-directed learning : theoretical and conceptional considerations. Berlin : Waxmann.

Tough, Allen M. (1965). *The Teaching Tasks Performed by Adult Self-Teachers*. Doctoral Dissertation. Chicago University, Ill.

Tremblay, N. (2000). Autodidactism : an exemplary model of self-directed learning. *In* Straka, G. (dir.) *Conceptions of self-directed learning : theoretical and conceptual considerations* (p.207-220). Munster : Waxmann.