

**Thematic Session: Job Requirements and Workers' Learning Practices:
Survey and 5 Case Studies Profiles of the Ontario Labour Force**
by David Livingstone and the EJRM Group

This session draws on current survey and case study research to assess claims about relations between working conditions and learning practices in the “knowledge-based economy”. We focus on the correspondence between knowledge and skills of the currently employed Ontario wage and salaried labour force, and entry and performance requirements of their jobs. Profiles based on a large-scale provincial survey are summarized. Then findings for five linked case studies (auto workers; clerical office workers; computer software employees, public school teachers, as well as disabled workers in all sectors), using semi-structured in-depth interviews, are presented. Limitations on studies of learning during work and implications for future research will be suggested. The seven papers are:

1. Basic profile of education-job requirement matching: Ontario wage and salaried employees, 2004

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This paper is based on a 2004 province-wide Ontario survey (N=1,709) of wage and salaried employees. Respondents were asked about their own formal educational attainments, continuing education courses and informal learning practices, as well as the entry and performance requirements of their jobs and their estimates of the match between their formal education and their job requirements. Profiles of these matching patterns (entry credential gap, performance gap and subjective underemployment) are summarized and related to socio-demographic characteristics and job control measures. These patterns are also analyzed for five specific sub-groups: auto workers; clerical office workers; computer software employees, public school teachers, as well as disabled workers in all sectors.

2. The role of schooling, formal courses and informal learning in staying current in information technology

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Canada is becoming more of a credentialed society as more people acquire higher levels of formal schooling, take adult education classes and engage in employer-sponsored training. This is largely in response to the notion that workers must gain more knowledge and abilities to compete in the ‘knowledge economy.’ However, amidst this rhetoric is the counter argument that workers actually have more knowledge and abilities than they are able to use on the job and that they are already engaged in systematic upgrading. This research uses survey data from Canada-wide and Ontario samples as well as a case study of a software development lab to examine the degree of match between the education and learning of information technology (IT) workers and their daily job requirements. Specific attention is paid to the differential impact of formal schooling, employer-sponsored training, and informal learning on how IT workers do their jobs and stay current. Findings indicate that IT workers value the problem solving abilities and foundational knowledge acquired through higher education. However they place more importance on situational or informal learning experiences when discussing how they overcome daily challenges and keep up with the changing technological environment. With respect to education and job requirement matching, IT workers typically feel fairly matched to slightly overqualified in terms of their schooling, but they also report that they always have more to learn due to the constant flux of their industry. These findings call into question the strong emphasis on university level schooling as an entry requirement and also the burgeoning systems of credentialing and certification for specific technologies. Coupled with the development of the central thesis, this paper also develops a comprehensive profile of the work and learning environment of the IT industry.

3. Considering the teacher as learner: Exploring the connections between job requirements, training, and professional development within the context of secondary teaching in Ontario

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Teachers often occupy a special place in the minds of the public. Familiarity and memory often characterize this relationship with teachers and teaching. Having been students ourselves, we may recall particularly notable or even infamous teachers in our own lives. However, recent labour action in Ontario has reconceptualized the roles of teachers, questioning their professionalism and the requirements – both academic and skill-based – to become a teacher in this province. Mindful of the recent labour context, this study explores the extent to which there is a match between the official requirements to become a teacher, the teacher training programs, teachers' skills and knowledge, and ongoing professional learning. Drawing from in-depth interviews and provincial and national surveys, this study examines the extent to which teachers' own previous learning and skill accumulation match the requirements and realities of teaching in Ontario today. Implications and recommendations for teacher training, professional development, and, ultimately, teaching and learning strategies to meet the needs of students are provided.

4. Office workers: their role and learning in a fragmenting work environment

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Clerical occupations, feminized over the past century due to industrial age job fragmentation and deskilling are now undergoing new fragmentation due to globalization and computer technologies. Clerical workers are often well-educated but earn less than counterparts in most other occupations that require comparable education, a pattern that can be traced to the history of women in clerical roles. Today, continuing organizational outsourcing strategies take stable employment and sustainable livelihoods away from office administrative staff. Concomitantly, when clerical workers lose their full-time jobs, they also lose access to employee-funded learning

opportunities. This is problematic for office workers, who need to maintain technical currency in computer software in order to retain eligibility for new work opportunities. The issue is exacerbated by the types of job opportunities available to displaced clerical workers; increasingly many seem to find themselves in temporary and part-time contract roles, which pay less and offer few if any benefits. Training courses become less affordable even as the temporary worker is given less opportunity to learn job skills informally from office peers. This paper looks at the changing circumstances of clerical workers and the implications for the work and learning opportunities offered to clerical workers in today's marketplace.

5. Autoworkers and the role of formal and informal learning in times of lean production

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Global competition and technological innovation have enacted great change in Canada's auto industry in recent years. The industry has responded to declines in sales and profits by investing in automation and by restructuring their production, supply and management. This has resulted in plant closing and drastic workforce downsizing. Drawing from a series of in-depth interviews, the objective of this study is to assess the correspondence between autoworkers' education and employment by using a more inclusive criteria for learning; one responsive to the particular educational history of auto workers. While traditional approaches attempting to assess the correspondence between learning and work have focused on paid employment and organized education, this study will take into account the significant interrelations between work and other types of learning that often do not occur in an organized setting. Further, a detailed account of how the considerable changes in the industry have affected this relationship between work and learning will be presented.

6. Struggling to remain employed: work reorganization and the learning strategies of workers with disabilities

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The world of work is rapidly changing as organizations implement flexible work practices and new technologies throughout the work year. The skills and educational requirements of jobs vary with declines in the demand for some and the ascendancy of others. As a strategy to remain competitive, people continually develop new skills to be work ready even though their abilities now surpass job requirements. This variance in education and job requirements is masked by credential inflation and employer distress over alleged skill shortages. Using data from national and Ontario surveys and a case study of workers with disabilities in four industrial sectors: information technology, teaching, office work, and automotive, this study examines the correspondence between the knowledge of these workers and their job requirements. Workers with disabilities encounter distinct barriers in their work and learning that include inaccessible buildings, work structures and public transport. Attention is focused on the strategies that workers with disabilities use in their formal and informal learning and work-based training to remain employed. Survey results show that workers with disabilities experience immense barriers in their formal schooling. Some are compelled to alter career objectives. In employment, most workers with disabilities build a strong skill base through on-the-job training and informal learning and consider these more relevant than the preparation they received from their formal education. Over 40% of workers with disabilities report correspondence between their knowledge and job requirements; however, one-third feel somewhat overqualified from the lack of promotional opportunities and the underuse of their credentials. This study suggests educational programs ensure that their buildings and services are accessible, that their environments are inclusive and that suitable accommodation processes are instituted for students with disabilities. Disability awareness training must be established in paid work environments. More workers with disabilities should be hired in higher level positions and have appropriate accommodations.

7. The empirical observation of cognitive processes, abilities and knowledge

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A technical issue common to the WALL and the EJRM projects is the extent to which it is possible to observe cognitive processes, abilities and knowledge in empirical research. The two surveys provide evidence of informal learning in selected categories of situation, which are useful in confirming and amplifying the findings of other surveys of informal learning. This information about the loci and distribution of learning is also valuable for the purpose of qualifying the analysis of education beyond formal learning, and in modifying the policy conclusions frequently drawn about the importance of spending on formal education. Nevertheless, the responses to the surveys and interviews give limited evidence about the nature of cognitive processes and of the cognitive abilities and knowledge acquired that are needed if the nature and significance of work and of learning are to be better understood. This paper outlines the concept of learning by experience, including learning during work, summarizes the main findings of research in several fields that relate to cognitive processes and the resulting abilities and knowledge, including Polanyi's concept of personal knowledge; considers the implications for work and for learning, briefly examines notions of the use and transfer of cognitive abilities, and considers the issues in attempting to design methods to identify cognitive development and its results. The issues are illustrated by reference to categories of learning used in the WALL and EJRM surveys including housework, voluntary work, and to early empirical findings from the EJRM and other case study interviews. Suggestions are made about the interpretation of quantitative and qualitative data, and some implications are drawn for future research.

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