MOVING FORWARD ON A NATIONAL STRATEGY FOR DEVELOPING ESSENTIAL SKILLS

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ABSTRACT
This pan Canadian participatory action research project involved faculty and managers in twelve Canadian colleges and institutes, nine employers, and 1300 students and workers in examining exemplary practice in essential skills as a way of catalyzing system change. Multiple sources of data were used in the three year project and key findings included: (1) the advance of a new knowledge system that documented an integrated approach to developing essential skills; (2) a culture shift that moved towards rigorous needs analysis and evidence based interventions in technical training programs; and (3) integration and ownership of essential skills in college programming.

As Brown (2012) so aptly states action research, which is also known as professional inquiry or reflective practice, is at the heart of school improvement. And such was the case with this pan Canadian project that aimed to improve the college and institute system by increasing the employability of students and the upgrading of workers through essential skills training. Countless reports continue to attest to the fact that Canada is facing a skills crisis as a result of significant economic and social changes. These changes coupled with the need for advanced technical skills are now essential for Canadian workers to succeed in a knowledge based, technology drive, and global economy (Human Resources and Skills Development Canada (HRSDC), 2013; Chamber of Commerce, 2013; Association of Canadian Community Colleges, 2013; Canadian Learning and Literacy Network, 2012). As staggering as it sounds, more than 40% of Canadian adults cannot read, write, do mathematics or solve problems at the level required to fully participate in today’s economy.
(Canadian Council on Learning, 2006). Furthermore, close to 60% of Canada’s current college student population have document literacy skills below Level 3, the level associated with efficient learning and application of technical skills and knowledge at work (Statistics Canada, 2010).

**The Meaning of Essential Skills**

Over the past decade or so, essential skills have served as a common language among educators, employers and service providers. Using the language of the workplace helps educators to discuss skill gaps with employers and employees because essential skills describe functional tasks (Essential Skills Ontario, 2012). This common language was useful especially to college practitioners in this project who were committed to increasing the participation and success rates among groups in need of skills training. Priority groups identified at the onset of the project included: new Canadians, working age Canadians in need of higher skills and Aboriginal peoples.

In terms of background, the common language of essential skills is drawn from the findings of The International Adult Literacy Survey (IALS) carried out in 1994 as well as the findings of the 2003 International Adult Literacy and Life Skills Survey (IALSS) which demonstrated that literacy skills were clearly linked with education, employment earnings and employment status (Statistics Canada, 2005). Instead of defining literacy as a single skill, the surveys measured a populations’ skills on a 500 point scale in three domains: prose, document and quantitative literacy. The quantitative scale eventually evolved into the numeracy scale and problem solving was added as another domain area in the IALSS. This second international study sweep looked at the literacy, numeracy and problem-solving proficiencies of 23,000 Canadians aged 16 and over in all provinces and territories. Competence in these four domains (prose literacy, document literacy, numeracy and problem-solving) was each assessed on the same five hundred point scale ranging from Level 1 to Level 5. Individuals that were at the lowest level of mastery (Level 1) had minimal literacy skills whereas individuals at Level 2 could comprehend basic material but may experience difficulty with more complex concepts. According to Statistics Canada (2005), Level 3 was considered to be “the minimum ‘desired level’ of competence for coping with the increasing skills demands of the emerging knowledge and information economy” (p. 9). As Essential Skills Ontario (2012) explains,” it is generally accepted that individuals who can demonstrate competency with Level 3 tasks are able to manage the demands of daily life and of most entry level jobs” (p.1). Levels 4 and 5 pertained to adults who had the highest level of mastery, which was beyond the high school level.

During this same time period, Human Resources and Skills Development Canada (HRSDC) conducted essential skills research to produce profiles of over 300 occupations and constructed complexity ratings for other skill domain areas not measured by the IALS. These profiles, which reflect the skill demands of jobs within their sectors, are often used with occupational standards to develop technical training programs in colleges and institutes. For example, several institutes of applied science and technology refer to the ES profiles of the construction trades to determine which tasks require competencies in numeracy (to calculate how maximize use of a sheet of plywood), or in document use (to
read flowcharts and specification sheets) and at what levels of complexity. They require upgrading in these foundational skills prior to the technical program, or integrate it into the technical programs themselves. Increasingly, Human Resources Sector Councils (for example in nursing, information technology, etc.) contribute to developing these ES profiles, and colleges concerned with increasing success rates are integrating testing and upgrading into their training programs.

Today essential skills are described as the skills needed for work, learning and life. Given their broad application, these nine essential skill domain areas include the foundational skills of reading, writing and numeracy, as well as the skills to manage information and solve problems, to work with and communicate effectively with others, and to use digital technology. Furthermore, several approaches to the assessment and measure of these domain areas have also been developed such as The Test of Workplace Essential Skills (TOWES), the Communications and Math Employment Readiness Assessment (CAMERA), the Prose, Document and Quantitative (PDQ) Profiles and the Canadian Learning Evaluation (CLE).

**ADDRESSING THE PROBLEM IN CANADIAN COLLEGES AND INSTITUTES**

Given that profound changes in the global economy are increasing the demand for foundational literacy at Level 3 and above and that a high percentage of college level learners are below this level, a three year initiative (2010-2013) led by the Association of Canadian Community Colleges (ACCC) was initiated and funded by HRSDC. The project entitled “Developing a National Framework for Essential Skills” was conducted in collaboration with 12 colleges, institutes and cégeps (in Québec), as well as 9 employers across 8 provinces, and involved over 1300 participants.

As education is of provincial/territorial jurisdiction, the ACCC provides platforms for knowledge exchange, experimentation and learning, and dissemination of exemplary practices across institutional and geographical boundaries. Its mandate is to strengthen the capacity of member colleges and institutes to contribute to the development of advanced skills for employment. For a decade, the ACCC has worked in the area of essential skills initiatives with colleges; partners from the workplace; sector councils and service providers. As a result, it has developed an understanding of employability issues particularly those related to the need to develop essential skills of people who have been excluded from the labour force or have difficulty integrating into the workplace because of gaps in skills and cultural differences.

Two research questions grounded in this previous essential skills experience drove the project: (1) How can colleges, institutes and their various partners concerned with work force employability develop a knowledge system through its essential skills practice? And (2) How can this knowledge system be leveraged to address the complex challenges for qualified Canadian workers?
**METHOD**

**Design**

The project adopted a participatory action research methodology influenced by the work of Dolbec and Clement (2004), Stringer (2008) and Mills (2011). This approach encompassed three sub processes aimed at recognizing what had been done in a certain field of practice (research), creating new knowledge by reflecting on its practice (action–reflection) and improving its field practice (training). Several key assumptions underlined the methodology. First, the action research approach emphasized that all project participants were co-researchers in the process and in the ownership of the results. Secondly, the methodology implied a continuous open movement from practice through reflection to new knowledge. It was considered an iterative approach that allowed for adaption and modification as the project evolved. A third assumption was that a community of practice would develop, for example, with the members of the working group, members of the core team, essential skills practitioners, college managers and other stakeholders to engage in reflective processes on exemplary practices in essential skills. This in turn would lead to questions emerging from reflection and analysis of practice which would feed into the evaluation and modification of practice and outward to wider dissemination (ACCC, 2010).

The project design entailed four phases. During the preparatory phase the focus was on the tracking, identifying and compiling of existing essential skills practices and tools so as to create an initial national framework for essential skills. Representatives from employment service providers and organizations with the target groups, a working group and core team tackled this task together. They identified the employment issues facing the target clienteles and through an iterative process initially designed the framework capturing the existing knowledge on effective essential skills practice. This phase started in September 2010 and roughly ended in April 2011. During the pilot testing phase the draft national framework which came to be called the Integrated Approach to Developing Essential Skills was validated by 17 colleges, institutes and cégeps and in nine workplace sites across Canada. The third phase entailed both qualitative and quantitative data collection from the 17 sites and during phase 4 these multiple sources of information were analyzed and interpreted to enrich the integrated approach (ACCC, 2013). Phases 2, 3, and 4 blended together from May 2011 to March 2013.

**Phase 1-Capturing existing knowledge on effective essential skills practice.** During this phase of the project a number of information sources were used to develop an initial draft of the national framework. Consultations with a working group of essential skills practitioners and managers from the college system yielded a wide range of success stories and “lessons learned”. A content analysis technique (Maxwell, 2013) was performed on these preliminary data and six common factors emerged to include participant engagement, program approach, partnership development, assessment, program adaptability and trainer expertise. In addition, input from a team of essential skills specialists with research and design expertise from both the college and private sectors codified and structured this knowledge into an initial framework version of the ‘Integrated Approach to Developing Essential Skills”. Three national consultation meetings of essential skills practitioners, college and industry decision makers and an advisory committee of representatives from government, sector councils, unions, employers, colleges and literacy
organizations helped to refine the draft framework. Towards the end of this phase, the national framework was configured with 8 elements: socio-economic analysis; partnership development; awareness and promotion; essential skills interventions; adult education principles; professional practitioner skills; types of interventions and transition pathways to employability.

**Phase 2-Pilot testing the national framework.** A Call for Proposals to pilot the national framework was issued throughout the college system and in the end of the peer reviewed competition 17 sites across Canada were chosen to validate its applicability to meet the essential skill requirements of both college students and workers within the designated target groups. Attention to cultural and geographical diversity was given in the selection of the pilot projects. Nine of the pilot sites focused on testing the national framework with college students. A full range of programs participated in the pilot testing—from nursing to accounting to Aboriginal police preparation and tourism management. Students were from the mainstream 1 year certificate or 2 year diploma or 4 year degree as well as continuing education adult learners and immigrant job seekers. Eight pilot sites focused on testing the framework with workers. Again a variety of employer and employment sectors were involved in this phase of the project such as engineering, residential construction, steel manufacturing, government and healthcare services. Worker demographics included such client groups as foreign-trained professionals, underemployed and unemployed carpenters, and personal care and client service employees. To support the development of a community of practice among the essential skill practitioners, colleges were divided into three groups focusing on different priority groups.

**Phase 3-Data collection.** Multiple sources of data were collected from September 2011 to December 2012. The qualitative data was gathered from each essential skills practitioner conducting the pilot project and incorporated field notes that provided an accurate record of observations and events and journal entries that recorded reflection on practice throughout the period of data collection and analysis. A training workshop was developed to support each practitioner-researcher in collecting the data to ensure consistency and a coaching support network was established to help each researcher during the data analysis and case study write up. In addition, each essential skills practitioner collected quantitative data at multiple points in time. A research protocol and consent forms for all essential skills practitioners were developed during the beginning of the phase to ensure consistency of application and use of standardized instruments. At the point of intake each student and worker completed a learner profile followed by the administration of the pre TOWES or CLE which measured prose literacy, document literacy, numeracy and oral fluency. Each practitioner developed an essential skills intervention ranging from 24-40 hours of instruction which was blended into the normal program course or curriculum. Types of interventions varied depending on the needs assessment that was conducted with each group of college students and workers. They ranged from study skills sessions to on-line training where reading, summarizing and presenting tasks were drawn from authentic workplace documents. At the end of the training, the post TOWES or CLE were administered again along with a learner satisfaction questionnaire.
Between 4 and 6 months after the training the TOWES or CLE were administered for a third time accompanied by an impact questionnaire.

**Phase 4 - Data analysis and interpretation.** The data analysis path followed a modification of the explanatory mixed methods design espoused by Creswell and Plano-Clark (2011) and was conducted throughout phase 4. In this approach the qualitative data helps to explain and build upon the initial quantitative results. A regression analysis on the quantitative data sources such as Learners’ profile, ES intervention profile, pre and post test scores, satisfaction and impact questionnaires was done to identify which types of essential skills interventions lead to skill gains and under what conditions. Drafting and redrafting of the case studies based on established case study writing guidelines addressed biases and discrepancies among the qualitative data sources. Feedback on the final interpretation of the case study patterns were provided by the core team of experts. This team also conducted a meta-analysis by bringing together both sets of results to explain the two project research questions. Interpretation of the findings was written followed by a peer review of college personnel which contributed to further enrichment of the “Integrated Approach to Developing Essential Skills.”

**Validity and Trustworthiness of the Data**

To ensure the validity and trustworthiness of the data, a number of strategies were employed throughout the different phases of the project. The first strategy was intensive long term involvement of each essential skills practitioner throughout the data collection, analysis and interpretation periods (Maxwell, 2013). This allowed for checking and confirmation of observations and inferences. The second strategy was the compilation of rich data (Creswell, 2013). Multiple sources of data provided a full and revealing picture of what was going on in each college and institute throughout the duration of the project. Respondent validation or member checking (Denzin & Lincoln, 2011) was another strategy used to ensure validity. Systematic feedback on each data source used in the writing of the case studies was solicited by all essential skills practitioners. Triangulation was also used to make certain the trustworthiness of the data (Creswell, 2013). Collecting information from a diverse range of project participants and college settings using a variety of methods helped to reduce the risk of chance associations and systematic biases.

**Findings**

To help answer the first research question “How can ES practitioners in colleges and their various partners concerned with workforce employability develop a knowledge system through their ES skills practice?”, the findings from both the qualitative and quantitative data sources are presented in this section under the following main theme.

**Development of a Framework that Captures Patterns of Effective Practices Across Diverse Contexts**

Analysis of success stories and lessons learned yielded an initial framework that could be tested in pilot projects across the country. As the national project progressed through the pilot phase, the framework became a reference point for knowledge building. It gradually
yielded a shared language that allowed practitioners to describe challenges they faced in their ES practice and to explore changes in practices that could address them.

For example, the first element of the initial framework, *Socio-economic analysis*, was found to be too limiting to capture patterns of effective practices described in the cases. Higher learning gains were documented in workplaces and colleges that had done a thorough identification of ES needs and performance and career goals of students and employees. An essential skills practitioner described how she approached this critical first step and the benefits that followed:

“Through conversations with instructors and a follow-up paper questionnaire, the needs assessment served a dual purpose. Instructors were able to provide insights into challenges students experience in the classroom and had the opportunity to shape the content of ES training. A needs assessment with students served a similar purpose. Students shared information about areas they were concerned about and they felt that their specific needs were being addressed. This ensured that the intervention was viewed as worthwhile and that we could address the unique needs of our learners efficiently by targeting only those areas identified as needing work.”

As a result, this important first element of the framework was renamed *Needs Analysis*, reflecting a broader understanding of the concept of needs analysis which takes into account occupational requirements, as well as meaningful goals and objectives for stakeholders.

In the initial framework, some colleges understood *Promotion and Marketing* as a set of practices that emphasized messaging and ‘selling’ of a training product. However, analysis of the data showed that a demand-driven approach, focused on meeting learners’ needs led to more engagement on the part of stakeholders than one that was supply driven. A manager in a northern Ontario college described the challenge of creating awareness and securing engagement of employers and workers in this way:

“Companies, workers and students looking to enter the workforce are not aware of the importance of essential skills for training, safety and productivity. Workers feel that they are well trained and competent in their jobs. Companies feel that by hiring applicants who have completed post-secondary education, there isn’t a problem with the level of essential skills in their organization. Time must be taken to sit down with managers to review the data and to answer the question “why do I need this type of training in my company?”

This element of the framework was reframed as *Awareness and Engagement*, with supporting practices focusing on identification and engagement of stakeholders.
In addition, when documenting and sharing their experience of applying the framework in their pilots, employers, college instructors and managers realized the critical importance of Organizational Capacity for effective ES interventions. Success factors included: supportive organizational policies and practices, college faculty and/or employer willingness to release learners for ES upskilling, access to space and equipment for training, adequate budget to recruit qualified ES trainers to name a few. This element was added to the framework.

The initial framework had lumped together ES instructor activities in an element called ES interventions. As practitioners realized the value of early diagnosis of ES levels, its usefulness to inform training interventions, and the value of post-evaluation, this element was deconstructed to include Assessment, Training and Learning and Feedback and Follow-up.

The initial framework had focused on Adult learning principles as a key element. Throughout the project, practitioners identified a range of skills needed to achieve ES learning gains, including knowledge of ES theory and practice, inter-cultural communications skills, knowledge of business processes when conducting ES interventions in the workplace, for example. This element in the framework was reframed as ES Practitioners Skills, and has led to development of an ES practitioner’s profile.

To help answer the second research question “How can this knowledge system be leveraged to address the complex challenges for qualified Canadian workers?”, the findings from both the qualitative and quantitative data sources are presented under two main topics. These themes include: a college culture shift moving towards more rigorous evaluation of ES and ownership and integration of ES in technical training programming.

A College Culture Shift Moving Towards More Rigorous Evaluation of Essentials Skills
As part of the design for the pilot testing phase of the project, ES practitioners from the 12 member colleges were required to evaluate ES levels of multiple cohorts of workers and of college students across Canada, before and after ES interventions. They were also required to reflect on practices that had contributed to the learning outcomes.

Results of the TOWES and CLE pre-tests revealed that 61% of the 426 workers and 67% of the 882 adult college learners had scored below level 3 in the foundational skills (reading, writing, numeracy and document use) that are required to learn technical skills and to succeed at college and at work.

Results of pre-test scores shattered some college decision makers and faculty assumptions that gaps in ES only applied to high school dropouts. They provided evidence of gaps in ES among adults enrolled in a whole range of technical training programs offered in colleges and institutes, and among diverse groups of workers including foreign trained professionals, workers in service, construction and the steel industry, trades apprentices, etc.
Test results also confirmed what some faculty already knew: that a substantial proportion of first year students in applied technical programs are struggling because of gaps in the foundational skills. As one essential skills practitioner reported in their case study:

“Many instructors commented that college students are increasingly hard-pressed to keep up with assignments and readings. We sought to find out if improving student performance through Essential Skills (ES) training would enable students to become more effective, and therefore less likely to drop out.”

An initial resistance to investing effort in data collection and analysis to inform ES instruction was gradually replaced by a keen interest and motivation to diagnose students at risk early in their programs, in order to address the problem before it is too late. For the culture shift towards rigorous evaluation of ES to be sustained required that it integrate ES assessment and upgrading into technical education and training programming. Several colleges and workplaces decided to systematically pre-test applicants for their levels of ES, as a normal practice, to ensure they have the ability to learn technical skills and as a way of informing their technical training programs. Another essential skills practitioner describes how the college is ‘institutionalizing’ ES assessment and upgrading by making it a part of technical programs rather than a separate, remedial practice:

“The ES course is entitled ‘Effective learning strategies’. It is integrated in the schedule as a required course for each technical program. Students learn about ES and are assessed in the first week of their first term. The course starts as early as the second week of classes. Students will take a second test at the end of the ES course”

**Ownership and Integration of ES in Technical Training Programming**

Practitioners whose ES training yielded significant learning gains developed strong ownership and pride in what had been achieved. As an essential skill practitioner from an Atlantic college noted:

“This project is a stepping stone, and now is the time to show the Academic Deans at colleges across Canada that Essential Skills are an important aspect of student learning and that Essential Skills intervention should be incorporated into all programs that are delivered at the college.”

Integration of ES in technical programming progressed at variable speeds across the college system and took different trajectories. ES practitioners from five colleges who regularly reflected on their educational practices with their colleagues throughout the project, and had support from their senior managers were the first to take action to integrate ES assessment and development in the first term of technical programs, especially those with high dropout rates. On the other hand, progress was somewhat slower in colleges that achieved less compelling test results or whose senior management was not supportive. Over time though, these college instructors indicated a new
understanding of the assumptions, decisions and practices they had been previously taken and subsequently began to modify their teaching and training styles.

Another interesting finding was related to the results of the various provincial dissemination workshops. Here, project managers and ES practitioners viewed these events as opportunities to increase the visibility and credibility of their work, and to engage college decision makers, provincial policy makers and funders, and employers in conversations about how to integrate ES assessment and upgrading in technical training programming in colleges and in workplaces.

In particular, testimonials of students, workers and employers either on video or in person helped move this new awareness for integrating ES into technical training forward. One adult learner described the impact upgrading her ES in this way:

“The numbers with the (ES) test that we did, they are numbers, but my instructor can tell you when I started his class I was failing. I worked to implement the skills, and now I have a B+. Yeah! ... I work in a non-profit organization, and was able to improve my work. With the skills on how to read documents, on how to draft information, I was able to read the organizational policies and add to them. My boss is very happy with me.”

Such testimonials during the provincial dissemination workshops triggered decision makers and college faculty to realize that the current formulas of add-on remedial education and adult basic education were not adapted to an evolving profile of students who work and study at the same time, who may have been out of school for a while, and who may do better when their learning applied to practical tasks they care about.

Testimonials from employers and workers also led college and workplace stakeholders to review their assumptions about ES levels in the workplace, about the impact of ES gaps on performance and about the practices that can address the issue. As a senior engineer who emigrated from India and had taken the ES training in his workplace explained:

“I have an engineering background. The challenge here is to understand and adopt so many procedures before I can complete my deliverables. Communications and presentation work is more (important) here. ES helps me perform my work better”.

**Discussion**

Over the course of this three project the ACCC, participating colleges, institutes and partners concerned with workforce employability established a new knowledge system which included a national framework for developing ES; a virtual library of resources; a data base of 1300 learner profiles, test scores and impact evaluations as well as a growing community of practice. Together these constitute some of the building blocks towards a national strategy for developing ES. Most important, however, is the how the action research methodology used in the project has helped transform a college system into one
that values the importance of developing its own unique research culture. The transformation is discussed in the following sections.

**Developing Capacity for Reflective Practice**

Action research engaged managers and educators as co-researchers. Because of the deeply ingrained nature of educational traditions, most of them found it difficult to approach their own practice from a critical perspective. Developing this ability for reflective practice required coaching and facilitation to shift behaviour from reporting on educational activities and results, to also reflecting on practice. At the individual and institutional level, a dedicated group of experts from the ACCC team provided individual coaching for writing case studies: they asked questions, guided conversation and reflection, while leaving responsibility for writing the cases on the practitioners. While practitioners developed their capacity to write case studies that tell compelling stories, they also developed a capacity to conceptualize the meanings of what can be learned from their experience, and to reframe strategic and operational models at their particular college. As much as this required several cycles of reflection and action involving other stakeholders in the educational system and in the labour market, these practices are now part of their repertoire of skills.

**Challenging Assumptions and Interpreting Information**

Managers, educators and employers operate under certain institutional assumptions, structures and ways of working. Educators assume that students enter college with reading, writing and math skills they need to learn technical skills, and employers assume that a high school or college diploma is a good indicator that workers they hire have the foundational skills to perform at work. They believe that it is not their responsibility to develop foundational skills that should be acquired in high school, and therefore see no reason to invest in making changes to recruitment and instructional practices or to the curriculum in post-secondary technical training.

The dialogue that occurred among the key stakeholders during the institutional and provincial dissemination workshops helped to challenge those assumptions. When presented with evidence of low levels of ES from multiple colleges and workplaces, with diverse training programs and diverse client groups, decision makers from provincial governments, college managers and faculty, and employers recognized that the problem was a reality and as a result their closely held assumptions were challenged. With this new openness, they were more able to interpret the information on ES levels as the key contributing factors to valued organizational goals which encompassed student’s access, success, persistence to graduation in college programs and productivity and safety in the workplace. Both this new type of assumption hunting coupled with an openness to interpret the information in a different way made the issue not only meaningful to decision makers but also urgent to address.

Offering evidence-based solutions, and fostering dialogue on what each type of stakeholder could do to address the problem, stimulated readiness to make changes to recruitment, curriculum and practices beyond the national project. Some of these changes already
include integrating ES assessment and upgrading in the first term of technical training programs at the college and in technical programs in the workplace.

**Action Research to Inform Educational Programming**

To integrate ES into educational programming requires institutional commitment that is reflected through institutional policies and plans, for example by making ES a clear objective in the strategic plan and/or a key part of the student success strategy in a college or in the human resources development plan in the workplace. It may further require changes in educational programming which can be complex, especially where technical training programs and plans are established by governments.

A number of decision makers and ES practitioners emerged from the national action-research project as champions for change in their institution. Some found ways to integrate ES assessment and upgrading in the existing curriculum and have proceeded to do so in a number of programs. Others are experimenting by integrating ES in programs where learners are most at risk, based on their new understanding.

However, to sustain and institutionalize the change in practice will require some form of systematic data collection on desired outcomes such as increased student marks, persistence to graduation, and increased productivity at work. It will also require continued communications with the various stakeholders, checking on their assumptions, sharing and interpreting the new information gathered, and then fine tuning educational practices.

These strategies, which resemble the action research cycle, would be necessary for the knowledge system to constantly evolve so as to inform effective educational programming and practice. Given financial and time constraints in which colleges and employers operate, sustaining engagement of practitioners to continue their reflective practice is likely to be a challenge but it is feasible which is now discussed in the next section of the article.

**MOVING FORWARD THROUGH FUTURE ACTION RESEARCH**

Building on the success of this project, a community of practice among the essential skills instructors has already developed. This established network is pivotal in continuing and supporting the work at the individual classroom or workplace level. It is here that instructors can use their new applied knowledge on action research to identify problems, design small scale data collection methods, analyze and interpret the information and make noticeable teaching and learning changes for students and workers. Many questions have arisen from this national project that can be translated into action research projects at a ground level.

In terms of future research areas, these questions might be centered on the different elements of the essential skills framework. At the needs analysis level, it may be important to investigate different types of non-print forms for identifying learner and worker needs and goals or to try out new ways for getting buy-in for non-technical training. For the partnering element, it may useful to find out how learner involvement in the partnering
process could be given course credit or count for a service learning project. As well, questions could be asked about innovative ways of getting decision makers down on the shop floor to see firsthand how essential skills are blended into the technical training. The awareness and engagement element could generate research questions related to how in house activities promote awareness of the benefits of essential skills training in the same way that departments promote the benefits of contributing to the United Way Campaign. For the pathways to employability element, questions could be asked by instructors as to the impact of worker or learner peer assessment when considering a prior learning and assessment pathway or the effectiveness of documenting the practice of essential skills while out on work placement. For the assessment element, instructors could investigate alternative assessment methods other than standardized tests, observations, interviews and demonstration by using learner and worker focus groups to obtain information and then apply the alternative method to a training solution. Action research questions pertaining to training and learning might focus on novel ways of embedding occupational materials into the essential skills curriculum or experimenting with different teaching approaches such as lecture capture or blended learning. For the element of feedback and follow-up, instructors could try out various models of mentoring and coaching models with their learners and workers to determine their impact on progress or develop a weekly reporting grid on essential skills progress for workers and verify its usefulness in the transfer of learning at the workplace.

On a concluding note, a national project of this magnitude is not without its limitations. Employing a random sampling technique was not feasible in determining which learners and workers would participate in this action research project and therefore generalizations about the results must be made with caution. As well, two types of standardized tests were used to measure essential skills progress because of convenience and availability. Therefore in some instances, direct comparison of domain scores for learners cannot be made. There is also the question of occupational sector representation and target group representation. Although every effort was made to identify those key sectors and groups, the timing of the different phases of the project were constraining. More workplaces in the manufacturing sector and a larger number of Aboriginal and new Canadians might have yielded a different profile of essential skills development. Finally, assumptions had been made about the importance of on-line learning for workers but in reality as much as there was interest this group needed a more systematic approach in supporting e-learning.

REFERENCES


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