

Essential Skills for Piping Project: Summary of Research

Introduction

This report summarizes the research conducted as the first stage of the UA Piping Industry College of BC's (PIC) Essential Skills for Piping (ESP) project. It has been prepared for the Steering Committee for the project, stakeholders, and all interested parties. This project is funded by the Office of Literacy and Essential Skills (OLES), an arm of Human Resources and Skills Development Canada (HRSDC).

This project's primary goal is to promote the value of essential skills and literacy training to as many stakeholders and industry representatives within the piping trades as possible, so as to introduce a long-lasting sustainable system that will benefit apprentices, journeypersons and supervisors, and employers alike. To accomplish this goal, PIC has contracted with HRSDC to:

1. Perform research to determine best practices in literacy and essential skills.
2. Adapt these practices to an applied, focused piping trades program. The program will consist of three pilots: a pre-apprenticeship literacy and essential skills course, a continuous mentoring program (possibly online), and a supervisor's course.
3. Evaluate the pilot programs after their delivery and make recommendations for future sustainable programming.

This report marks the end of the first phase of the project, in which research into essential skills best practices has been conducted and assessed. The recommendations in this report will help the project's Steering Committee make program planning and curriculum design decisions as the project continues. The following topics are discussed:

- The need for essential skills in piping training
- A summary of the research conducted as part of the review and its findings
- Current essential skills projects in Canada and elsewhere, including the best practices in essential skills training modeled in these projects.

Attached to this report are a formal literature review that details the academic research findings associated with this project, and an extensive research bibliography indicating the sources consulted to date for the project.

The Need for Essential Skills

Essential skills training is not new in Canada. Beginning in the early 1990s with the Essential Skills Research Project¹, the HRSDC, training providers, and educational institutions have been identifying, refining, and promoting essential skills training across the country. The nine essential skills identified by HRSDC are reading, document use, numeracy, writing, oral communication, working with others, thinking, computer use, and continuous learning. As the Literature Review attached to this report indicates, the number of essential skills trainers, practitioners, and programs throughout the nation is large, and growing, and there appears to be consensus about the effectiveness of essential skills training's effectiveness in promoting success of apprentices (see Appendix A).

Apprentice-Level Employees Still Unprepared

However, in spite of these successes with essential skills training in Canada, the PIC and other piping industry employers and representatives are still faced with a problem: the percentage of Red Seal completions in plumbing and piping does not seem to be going up. In fact, the pass rate is currently around 55%, indicating either that not enough essential skills training is being done in the piping industry apprenticeship training, or that the training is not meeting all the needs of the apprentices.

Moreover, employers, suppliers, and supervisors in the piping sector (and other trades) have expressed common concerns about the literacy and essential skills of their employees. They report that many apprentices, while able to pass the exams to qualify for Red Seal, are still unprepared for the workplace. The major gaps appear to be in critical thinking and problem solving, interpersonal skills, and life skills – all skills required to maintain employment, be effective on the job, and keep up-to-date with technology.

ESP Project's Goals

This two-fold problem indicates that a different or expanded approach to essential skills training may be necessary in the piping industry. The Essential Skills for Piping (ESP) project's goal, therefore, is to examine the essential skills practices in Canada now, determine the best practices in essential skills training to meet the needs of apprentices and employers, and design pilot programs to attempt to meet those needs with enhanced skills training. The end result, ideally, will be a sustainable, comprehensive program that could be adopted by the piping industry as a foundational component of its apprenticeship training.

Summary of Research Methods and Findings

To begin the project, the PIC contracted the University of the Fraser Valley's Communications Department to supervise and conduct research into essential skills training in Canada. The formal literature review found in Appendix A is summarized here.

Research for this project was completed by a team with expertise in both researching and teaching essential skills training, workplace learning, learning strategies for diverse populations,

¹ Canadian Labour and Business Centre. (2007). The link between essential skills and success in apprenticeship training: An analysis of selected essential skills initiatives in apprenticeship across Canada.

communications, and adult education. Researchers first tried to find academic articles that came from peer-reviewed scholarly journals and/or conference proceedings, and next they turned to popular materials from recognized trade organizations, sector councils, or reputable literacy advocate organizations (See the Bibliography for a complete list of resources).

The initial searches did not use a specific range of publication dates so that a full survey of the literature could be conducted. Following the initial phase, a publication date range from 2005 to 2010 was used to ensure the most current literature was consulted.

Summary of the Research

The search for academic research turned up very little empirical data on best practices in Literacy and Essential Skills (LES) training. Likewise, there is very little assessment or evaluation of the effectiveness of LES education for individuals as they progress through their careers. Any quantitative measurement of a program's effectiveness most often ends at the Red Seal examination point.

The government and popular resources consulted showed that there is consensus in Canada about the importance of LES training and the need to up-skill the workforce. However, the Canadian literature, both academic and popular, inevitably leads back to the same basic resources for LES: Skillplan and TOWES. Both of these are highly supported by HRSDC, and since most of the LES projects in Canada are funded by HRSDC, it is not surprising that this cross-referencing of Skillplan and similar programs as the best practices in LES occurs. What is missing is critical analysis of these programs' effectiveness and validity.

After a careful review of the various Canadian programs using material originating with SkillPlan and TOWES, one key observation is that the majority of LES training in Canada is designed from a patriarchal approach to teaching and does not meet the needs of a growing diverse population of learners. As noted by Agrusa, Iskat, and Sizoo in their 2005 report, the problem with vocational education is that it does not help individuals learn how to learn. The challenge of making LES training "stick" and transfer to the workplace is still problematic.

Finding little new information in the Canadian literature, researchers turned to international programs. The American, United Kingdom, and Australian literature includes more objective research, a call for improved approaches to LES training, and recognition that evaluation measures need to be built into both program planning and learner follow-up.

Observations

Much of Canadian LES programming in trades training focuses primarily on three or four of the nine essential skills identified by HRSDC. Reading, document use, and numeracy, in particular, have been identified as the most significant essential skills required in the trades workplace, with writing skills as a fourth included in some programs. Curriculum and resource material for teaching these essential skills is readily available. However, most programs touch very lightly on the other essential skills, if at all.

Instructional effectiveness is a key area for this project's efforts to focus on. The essential skills training needs to be integrated carefully throughout the trades program and reinforced with

active and collaborative learning strategies. These strategies will incorporate a variety of learning styles and increased awareness around the diverse learning needs of today’s workplace learner.

Finally, the LES models being used in the United States and Australia should be seriously considered in the program planning of an holistic approach to LES training and formative evaluation (see below in International Projects for some details of these programs).

Current Projects and Best Practices

In Canada, numerous essential skills training projects are ongoing, most funded by the HRSDC. One study, conducted by the Canadian Apprenticeship Forum in 2007, cites 47 different projects nation-wide. This section will identify some of the current projects, both in Canada and internationally, and list best practices in LES training represented in these programs. Given the wide variety of ongoing projects, only a small, representative sample of projects is listed here.

Canadian Projects

The following table itemizes the seven case study projects that were analyzed by the Canadian Apprenticeship Forum in its 2007 report, *The Link Between Essential Skills and Success in Apprenticeship Training*.

Table 1. Summary Descriptions of Seven Selected Case Study Initiatives. CAF (2007). The Link Between Essential Skills and Success in Apprenticeship Training

Program/ Initiative Name	Lead/Driving Organization	Geographic Coverage	Summary Description
Nova Scotia Apprenticeship Essential Skills Strategy	Nova Scotia Department of Education, Apprenticeship Training and Skill Development	Nova Scotia	Nova Scotia conducts informal interviews and trades-specific Essential Skills activities to assess candidates’ Essential Skills levels and to develop individual learning plans. A variety of delivery options are provided to the apprentice to enhance the acquisition of their Essential Skills.
Essential Skills Initiative – Commission de la construction du Québec	Commission de la Construction du Québec (CCQ), Québec Ministry of Education	Quebec	The CCQ integrated Essential Skills training into the technical training component of the apprenticeship program for all 26 construction trades in Quebec.
CARS Essential Skills Project	Canadian Automotive Repair and Service (CARS) Council	National	CARS Essential Skills project aims to increase foundational skill levels in motive repair and service workplaces in Canada. The work is divided into three phases: 1. The development of Essential Skills profiles; 2. The assessment of journeypersons current level of Essential Skills; and 3. The comparison of the Essential Skills levels required to complete training with the Essential Skills levels required to perform industry jobs.
Government of Manitoba – Essential Skills Strategy	Apprenticeship Branch Government of Manitoba	Manitoba	Through its Essential Skills Strategy, Manitoba: 1. Developed Essential Skills assessment tools and processes and began integrating them into existing apprenticeship training processes; 2. Developed curriculum models and sample materials; 3. Established partnerships for the delivery of trades-related Essential Skills and English as an Additional Language (EAL) upgrading; and 4. Modified its internal branch procedures and policies related to intake assessment and data storage.

OCN Building Construction Essential Skills Upgrading Project	Opaskwayak Cree Nation (OCN)	Manitoba	The OCN developed and piloted an 18-week <i>Essential Skills Upgrading Project</i> for apprentices who are preparing for level 1 carpenter technical training. This program was part of a larger initiative and included work experience and life skills training.
Keyano College Essential Skills Programs	Keyano College/ Syncrude Canada	Alberta	Keyano College collaborated with Syncrude Canada Ltd. to develop a reading/writing and a mathematics course for Syncrude employees. Keyano College has since adapted these courses and delivers the programs to other public and private sector organizations.
SkillPlan BC	Construction Industry Skills Improvement Council (SkillPlan)	BC and the Yukon	SkillPlan offers tools and services which are designed to improve the Essential Skills of apprentices and journeypersons working in the unionized construction industry in BC and the Yukon Territory.

Further and, in some cases more recent, programs or resources of interest to this project include the following:

- **HRSDC** – The Canadian government web site on essential skills gives extensive information and resources on essential skills and their development. However, the material available here is necessarily static, in the form of workbooks, DVDs, and self-directed modules, and is not accessible to all learners who wish to improve through self-study. The material offered here is used in many of the Canadian programs ongoing now, and it offers trades-specific examples and language. It does not focus on any one trade, nor does it integrate the essential skills training with trade-specific training.
- **Workplace Education Manitoba** – This provincial government organization has been working on several initiatives. The aWest project is a drop-in centre in Winnipeg offering free essential skills training to apprentices, trades qualifiers, trades people studying for exams, and anyone interested in trades careers. Other project run by WEM now include essential skills training for immigrants and Igniting the Power Within, a four-level certificate series of workshops on essential skills and Prior Learning Assessment and Recognition for aboriginal community advisers, counselors, and educators. Curriculum and examples of these programs are not readily available, but at first glance these programs, while interesting, do not have much relevance for the ESP project.
- **Alberta Workforce Essential Skills** – AWES is working on current projects that show promise as resource materials for the ESP project:
 - **Broadening the Base – Strengthening Adult Learning, Literacy and Essential Skills in the Workplace.** This project consists of a set of materials related to safety talk training. The materials include a poster series, along with workshop materials for training safety presenters: a trainer manual² and a participant manual³. These workshop manuals are designed to provide strategies for delivering safety talks effectively to workers with essential skills limitations and to raise awareness with in-house trainers about the impacts of

² Trainer manual found at <http://www.nald.ca/awes/publica/reports/mepst/presguid/presguid.pdf>

³ Participant manual found at <http://www.nald.ca/awes/publica/reports/mepst/parthand/parthand.pdf>

essential skills limitations on training. The skills and activities presented in the manuals represent many of the nine essential skills; moreover, they incorporate diverse learning styles and interactive teaching techniques and could be used as a model for program planning for the ESP project, especially for the supervisor training component.

- **Implementing Essential Skills at Pockar Masonry** – Specific to this particular company, the workplace essential skills program includes a variety of activities targeting many essential skills. The lists of these activities could be useful in helping the ESP planners design activities for the program.
- **Bow Valley/NAIT** – As the originator and primary distributor of the Test of Workplace Essential Skills (TOWES), Bow Valley College provides trade-specific essential skills testing and resources to programs such as the carpentry program at NAIT, which used TOWES to test incoming carpentry apprentices. Those with identified essential skills gaps participated in 20 hours of essential skills tutoring in addition to their regular programming. This assessment focuses on reading, document use, and numeracy. NAIT also incorporates a “Learn to Study” unit in its first-year plumbing apprenticeship training.
- **Skillplan** – The Skillplan TOWES Measure Up website is a web resource that addresses essential skills independently of a specific trades training program. Users are invited to test their essential skills of reading, document use, and numeracy. After testing, practice activities, career resources, and workbooks are available for self-study. The *Getting Started* manual⁴ is a useful starting point for developing work-related activities to incorporate into LES training, though it is fairly basic and also focuses strictly on reading, document use, and numeracy.
- **ESPort** – This online Essential Skills Portfolio Occupational Readiness Training program is designed to help job seekers identify and improve on their essential skills abilities while creating and maintaining job-related portfolio materials. While this resource will tailor materials to specific occupations, it is not integrated into any specific trades training program, and it requires computer familiarity for its successful use.
- **Ontario Skills Passport** – This Ministry of Education website provides essential skills training, self-assessment, and planning resources and links for job seekers, workers, and employers. Also offered are examples of curriculum for essential skills training, though many of the links are to high school training modules.⁵ The materials here focus on most of the essential skills itemized by HRSDC, though “critical thinking” (as a component of thinking skills) and continuous learning are not covered at all, and working with others is addressed merely as a work habit, not as an essential skill. This program has a heavy emphasis on numeracy, which has been split into five different categories. As with many

⁴Found at http://measureup.towes.com/pdfs/Developing_W_R_L_Materials_Web.pdf

⁵ Ontario Skills Passport curriculum examples found at <http://skills.edu.gov.on.ca/OSPWeb/jsp/en/Curriculum.jsp>.

of the other programs and resources, the material here is available online for self-directed study or improvement, or to inform program planning for practitioners.

- **ITA Essential Skills** – The Industry Training Authority is piloting a web resource for essential skills training. This website walks participants through an Essential Skills Outline, which identifies the essential skills important to the particular trade; the Essential Skills Passport, an online assessment to determine participants’ current skill gaps; and an Essential Skills Learning Plan connected to online activities designed to hone essential skills. This program focuses primarily on reading, document use, and numeracy. It is meant to stand alone and is thus not integrated into specific trades training, though it does use trade-specific examples in the testing and training modules. This online program again requires computer access and familiarity.

This list is by no means exhaustive, but it identifies some important trends in current Canadian essential skills training and resources.

Recent PIC Projects

The PIC Training Centre has had recent success with programs that incorporate life skills training along with the typical essential skills training offered in similar programs nation-wide. In the Piping Opportunities for Women program, a six-week exploratory course offering a basic introduction to steamfitting, sprinklerfitting, welding, and plumbing to women, the curriculum includes two full weeks of training in life skills topics. The list below represents only a few of these topics:

- Interpersonal communication
- Anger management
- Conflict resolution
- Listening skills
- Study habits
- Note-taking
- Retention skills

These skills are seen as the foundation upon which learners will build their essential skills training in document use, reading, numeracy, writing, oral communication, working with others, thinking, computer use, and continuous learning.

In the Plumbing Foundation program, a 16-week program that teaches Level One plumbing to learners in an expanded format, the same topics are covered in even more detail. In both the POW and the Foundation programs, practitioners attempt to address all of the nine essential skills, rather than just the primary three or four commonly identified as most significant to trades training. Perhaps most significant is that the instructors attempt to integrate the essential skills and life skills instruction into the trade-specific curriculum as much as possible. The goal is for these life skills and essential skills to *transfer* beyond the two weeks of training – into the learner’s further education, work, and life.

International Projects

Numerous projects in the United States, the UK, and Australia are interesting because of their use of life skills and integrated essential skills training. Further benefits to some of these programs are the recognized need for quantitative research to support the programming, along with instructor training and development as an integral part of the program process. This section explains some of the more interesting projects and discusses best practices that could be incorporated into the ESP programs.

- ***Work Readiness Credential*** – Focusing on Equipped for the Future (EFF) skills, this program developed by the Centre for Literacy Studies at the University of Tennessee-Knoxville in the United States at first seems similar to Canadian essential skills programs. The four modules consist of:
 - Work Readiness Reading Test
 - Work Readiness Math Test
 - Work Readiness Oral Language Test (assesses Speaking and Listening)
 - Work Readiness Situational Judgment Test (assesses five skills: Cooperate with Others, Resolve Conflict and Negotiate, Solve Problems and Make Decisions, Observe Critically, Take Responsibility for Learning)

The first three modules are similar to what is offered in most Canadian essential skills training and assessment, but the fourth module offers many of the remaining essential skills that are often absent from our Canadian programs. This credential assumes that each of the four pillars has equal weight in a potential employee's readiness for the workforce, an idea which is supported by the US Department of Labor's Secretary's Commission on Achieving Basic Skills. The EFF Handbook for Program Improvement⁶ could be a useful resource for the ESP program development.

⁶ Found at http://pli.cls.utk.edu/PDF/EFF_Program_Improvement5.pdf

- **Partnership for 21st Century Skills** – This organization, working primarily with the state systems and school districts in the United States, has identified a holistic model to incorporate essential skills training into academic curriculum. The figure below shows the model:

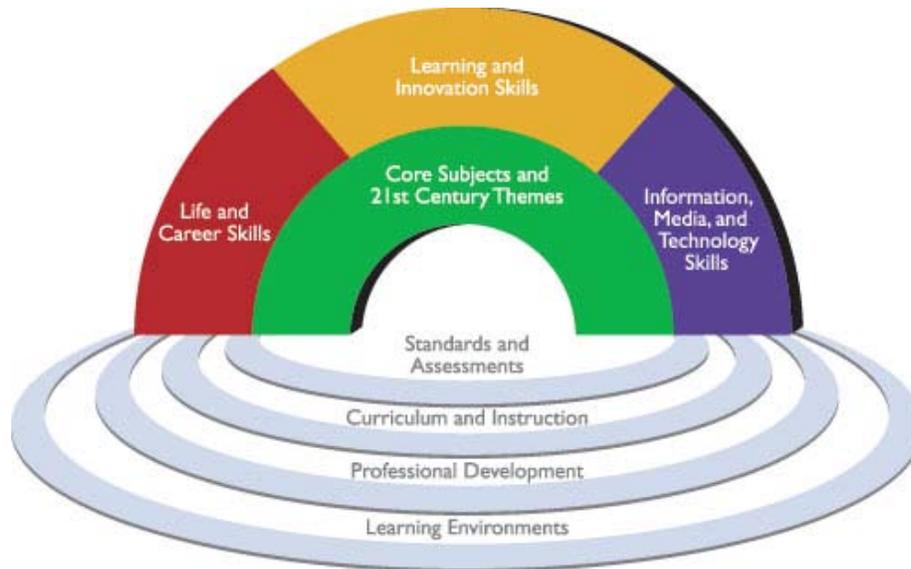


Figure 1. P21 Framework

Note that the core academic or training subjects are supported by the “softer” skills displayed on the outer rainbow ring. What’s important to note here is that the life skills, learning and innovation skills, and technology skills are valued equally as support for the academic learning. The outer ring skills are further defined as follows:

Learning and Innovation Skills - Creativity and Innovation, Critical Thinking and Problem Solving, Communication and Collaboration

Information, Media and Technology Skills - Information Literacy, Media Literacy, ICT (Information, Communications and Technology) Literacy

Life and Career Skills - Flexibility and Adaptability, Initiative and Self-Direction, Social and Cross-Cultural Skills, Productivity and Accountability, Leadership and Responsibility

Even though this system was designed primarily with grade school and high school students in mind, it possesses many of the life skills elements missing in current essential skills training programs in Canada. It also emphasizes the program support required through assessment standards, instructor preparation and curriculum design, professional development, and the learning environment.

- **Foundation Skills Framework** – Another American model, developed by the Pennsylvania Department of Education, the Foundation Skills Framework has been used as a tool for developing work-based foundation skills programs within the state’s Adult Basic Literacy Education system.

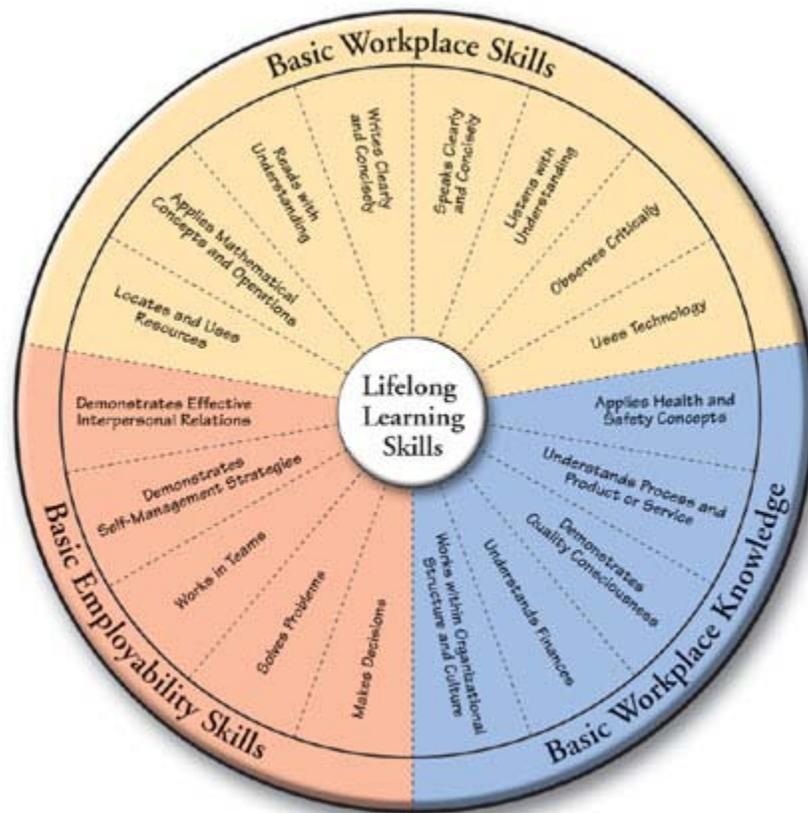


Figure 2. Foundation Skills Framework

The Lifelong Learning Skills indicated here expand greatly on the workplace essential skills typically offered in Canada, and could serve as a useful guide in program planning for the ESP program.

- **National Training Information Service** – This government-sponsored service in Australia offers official government training packages for trades. These training packages include employability skills components, which seem to be integrated into the training. The employability skills assessment is also linked to the trades program’s performance outcomes.⁷

⁷ For further detail, see <http://www.ntis.gov.au/?/trainingpackage/all>

- **Skills for Life Strategy** – This comprehensive system was first offered by the UK government in 2001. Its goal was to improve the literacy, language, and numeracy skills of 2.25 million adult learners by 2010; that goal was met two years early, and so the program set new goals and continued.

As part of this strategy, the National Research and Development Centre for Adult Literacy and Numeracy was introduced in 2002. Most remarkable about this program is the amount of ongoing quantitative research that supports its programming and directions. New reports appear regularly, and the Centre produces a journal called *Reflect*. It appears that the NRDC is a forum for academic, business, and training professionals to study, publish, and discuss their experiences and research into literacy and essential skills training. In fact, one of the aims the NRDC expresses on its website is “to improve teaching practice and inform government policy through the generation of knowledge, by creating a strong research culture and by developing professional practice.”

Of course, many more international literacy and essential skills projects exist, but these few represented here show how an analysis of foreign programs can contribute greater depth to essential skills programming in Canada, and they provide a broader base from which to analyze and evaluate existing essential skills programs.

Gaps in Current Essential Skills Delivery in Canada

Within the Canadian Essential Skills programs related to trades training, several gaps have been identified by this study:

1. The focus on three or four primary essential skills means that the other essential skills are largely neglected. Other life skills are not generally included in the programming, either.
2. Most programs focus on essential skills training as a separate component or module of the trades training, or even as a self-study or internet module for participants to use on their own. While the modules and training programs use trade-specific examples and language in their instruction, they are still not truly integrated into the trades training, which may be a strong reason the essential skills do not always seem to transfer to the workplace.
3. Teaching styles and practice are also not addressed well in the literature and current programming. This is a concern for two reasons. First, many of the essential skills training programs in Canada rely on workbooks and other static materials for instruction. While this method will work for some learners, it does not show responsiveness to the diverse learning needs of the population. Learners with gaps in reading and document use skills will likely have difficulty learning solely from workbooks or website resources. Second, without effective instructor training, the essential skills concepts cannot be properly integrated into and reinforced throughout the trade-specific curriculum.
4. There is a need for quantitative research on the effectiveness of essential skills training beyond the Red Seal exam results. Any program plan should consider long-term,

qualitative tracking of the participants through their careers, along with quantitative assessment to determine more immediate results.

Conclusions and Recommendations

Essential Skills training in Canada has come far since its early beginnings, and much good work has been accomplished. For instance, there is general consensus and evidence to support the idea that essential skills training is a good return on investment for employers and businesses. Furthermore, HRSDC has created and gathered a variety of effective resources that form the foundation of an extensive database of essential skills materials, and it continues to fund a wide variety of worthwhile programs.

However, the ESP program can use this opportunity to address certain gaps in essential skills training in Canada today. The findings from this report show that the following recommendations should inform the program planning for the pilot programs:

1. **Essential skills should be integrated throughout the curriculum.** Delivering essential skills in one block of instruction or as a stand-alone self-study unit will not ensure the transfer of the life skills and essential skills learning into the trade-specific instruction or into the workplace. Continuous repetition and follow-up on these concepts through the trade-specific training is required to create more well-rounded and capable apprentices.
2. **The program should go beyond reading, document use, and numeracy training.** The US and Australian models show that programs that incorporate life skills as a fundamental building block for the essential skills training are successful. The ESP programs should therefore incorporate life skills such as time management, anger management, conflict resolution, listening skills, retention, and note-taking into the training. In addition, the other six essential skills identified by HRSDC should also be covered. Even though these six are not typically considered essential to trades employees, the transfer of essential skills into the workforce requires a more holistic approach that considers all of the essential skills (especially continuous learning and thinking ability) along with the life skills mentioned above.
3. **Instructor training is a key component of effective programming.** To incorporate life skills and essential skills and ensure they transfer to further learning and workplace environments, the plumbing subject matter experts will need to be trained in effective delivery of essential skills. Furthermore, the curriculum should be designed so that essential skills are emphasized and reiterated throughout the learning process, not simply delivered in one block of instruction. Instructor professional development is a key component of a successful, sustainable program.
4. **Program evaluation must be considered carefully.** A mix of independent longitudinal, qualitative assessment and more short-term quantitative evaluations should be used.

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Appendix A: Literacy and Essential Skills Literature Review

Linda Pardy

Process

The topic of literacy and essential skills (LES) education for workplace preparation is a subject that transcends a variety of fields. The challenges facing those responsible for educating the workforce are well documented across education, business, industry, technical, and trade sectors (e.g. Brink, 2007; Canadian Labour and Business Centre, 2004). The purpose of this literature review was to first, situate the existing research on the current discourse of LES training as it applies to trades training in Canada. Second, it was to review the discourse on the implementation of effective LES training as part of technical training. Third, it was to outline both the key recommendations for effective program planning and implications for future research.

This review was led by a team with expertise in both researching and teaching essential skills training, workplace learning, learning strategies for diverse populations, communications, adult education, and psychology. Literature searches were conducted using several databases (e.g. ERIC, EBSCO, Statistics Canada, and Academic Premier) as well as an in-depth look at popular literature, trade publications, trade websites, and conference proceedings. Criteria for the review included the following: a) first, academic articles that came from peer-reviewed scholarly journals and/or conferences proceedings; and b) popular materials that came from recognized trade organizations, sector councils, or reputable literacy advocate organizations. Keywords used for this literature search included: trades training, literacy, essential skills, workplace learning, vocational education, educational upgrading, adult education, union education, employment readiness, Red Seal preparation, skill assessment, and employability skills. These keywords were used in a variety of combinations to ensure a cross section of the literature was included. The first phase of the review did not use a specific range of publication dates so that a full survey of the literature could be conducted. Following the initial phase a publication date range of the years 2005 to 2010 was applied to ensure the most current literature was incorporated. In addition, Canadian articles were first specifically searched out. However, it was soon discovered that the body of literature informing the Canadian context of LES education is not substantial in terms of offering a variety of opinions or resource options related to best practices. Literature from the United States, the United Kingdom and Australia was included.

Limitations

Significant time and effort was put into library research trying to locate scholarly articles and empirical research that outlines the best practices in LES training. There is a rich body of literature on the importance of LES, the social constructions of marginalization for people with low literacy levels, dialogue around what essential skills are, and the neo-liberal Canadian agenda to up-skill the workforce.

The availability of information on these topics is overwhelming. However, in context to the specific needs of this project, there is limited empirical data on best practices in LES or on the assessment and evaluation of the effectiveness of LES education for individuals as they progress through their careers. As a result, the limitations of this report are its use of popular literature and the absence of significant empirical data to support its observations.

Summary of Findings

There is no doubt that there is support and agreement that LES education is important and needed. There is also a strong presence in the literature that discusses integrating LES education with technical training. However, reviewing the Canadian academic and popular literature unfortunately resulted in a labyrinth of websites, sector council reports, and training institution reports that lead back to two main resources. These were SkillPlan and TOWES – both highly supported by Human Resources and Skills Development Canada (HRSDC). Each article or website referred to or linked back to these same resources. The LES agenda in Canada appears to be a construct of HRSDC which has some major advantages, but is also problematic. There is very limited research in terms of critical analysis and objective independent reviews. The majority of research available of Canadian LES is funded by HRSDC and therefore, accounts for the cross-referencing of SkillPlan and similar programs as the best practice.

SkillPlan and TOWES are the keystones for LES programming in Canada. Critical analysis of the two resources or the process in which LES is funded and conducted is limited. Research evaluating SkillPlan was almost nonexistent, but there was some scholarly data on TOWES. Mingail (2004) outlined the merits of using TOWES. Kline (2004) conducted a study with 2,688 working-age English speaking Canadians to evaluate the credibility of TOWES. She was able to demonstrate that TOWES appears to be free of gender bias and a solid assessment tool for the evaluation of LES. Kline warned that caution should be taken when altering or removing sections of the test – citing the relevance of the test design. Kirsch, Jungeblut, and Mosenthal (1998) contributed to further understanding how to effectively measure adult literacy. Their review provided insight into why TOWES is effective. However, it did not specifically address the use of TOWES in a Canadian context. Whiting and Kline (2006) assessed the conventional versus computer-administered TOWES and determined that there was merit in the computer-administered TOWES, but again warned that computer familiarity effects the final results and should be taken into consideration depending on the skill level of those being tested. They also concluded that computer-administered TOWES was an effective way for workers to do self-assessment on their own LES skills and could be used to self-measure progress.

In terms of follow-up research on whether or not LES training was effective on the work/life career development of individuals working in trades, Desjardins and Paquin (2010) recently published a report that followed a cohort of registered apprentices over a ten year period. The report mindfully outlines the challenges and achievements of the cohort. However, it does not include specific assessment of the merits of LES training on the success or failure of the individuals in the cohort. Likewise the Construction Sector Council (CSC) (2010) published a business case report in support of LES

training, but the report does not include an evaluation plan for how CSC will determine if LES transfers to long term workplace effectiveness.

Observations

The American, United Kingdom and Australian LES literature includes more objective research, a call for improved approaches to LES training, and recognition that evaluation measures need to be built into both program planning and learner follow-up. Canada is behind in this context.

There is strong acknowledgement that LES training is needed in Canada. However, there is a serious lack of empirical data and evaluation measures to determine if HRSDC resources, SkillPlan, and TOWES actually have a positive impact on the transfer of skills into the workplace. As a result, it is not possible to draw on the literature to determine the potential effectiveness of LES implementation. What is possible to determine from the literature is that resources outlined in SkillPlan and the use of TOWES are essential in the initial creation of LES program planning.

The researchers involved in this literature review suggest that the challenges facing LES program development are not a lack of resources, assessment tools, or curriculum, but a lack of effective instructional practices. As already outlined, there is an abundance of material on LES training. However, after a careful review of the various Canadian programs using SkillPlan and TOWES a key observation is that the majority of LES training is designed from a patriarchal approach to teaching and does not meet the needs of a growing diverse population of learners. As noted more than five years ago by Agrusa, Iskat, and Sizoo (2005) the problem with vocational education is that it does not help individuals learn how to learn. Unfortunately, this literature review did not discover that the situation they described has improved. The challenge of making LES training “stick” and transfer to the workplace is still problematic.

Recommendations

Based on this review there are three key recommendations. First, time should not be spent looking for or recreating curriculum or resources materials for teaching LES. There is strong support for the merits of both the SkillPlan resources and for using TOWES. Second, effort should be spent on improving instructional effectiveness. This should involve incorporating active and collaborative learning strategies, incorporating a variety of learning styles and increasing awareness around the diverse learning needs of today’s workplace learner. It would also involve revising instructional approaches to both content and delivery. Third, LES models being used in the United States and Australia should be seriously considered in the program planning of an holistic approach to LES training and formative evaluation.

Call for Future Research

This review has established that there is a need for further research. First, an independent mix method empirical review of the effectiveness of the SkillPlan approach would contribute significantly. Second, the discourse on how to increase LES effectiveness in the trades area needs to extend beyond HRDSC funded organizations and beyond the borders of literacy advocate agencies and sector councils. The responsibility to education towards LES for a Canadian workforce needs to involve a wide cross section of society. As a result, research that is cross-disciplinary and widely shared is needed. Third, a graduate follow-up survey should be conducted for each apprenticeship level to determine if LES was effective and if it transfers into workplace application. Finally instructor evaluations should be conducted that include student evaluations and classroom observations from qualified instructional skill evaluators. These evaluations should be used to track ongoing improvement and instructional effectiveness in the transfer of LES skills to workplace application.

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