

Final Report Electrical Program Standards Project

for
Industry Training Authority

by
BC Construction Association

In consultation with
Keith Dunbar
Keith Dunbar Global Consulting (kdglobal)

January, 2006

Contents

Executive Summary	1
Revise BC Electrician Program Outline	1
Obtain Employer Feedback	2
Policy Issues and Recommendations	2
BC Certificate of Qualification	3
Challenge Exams	3
Curriculum Resources	4
Delivery Options	4
Entry Level Trades Training (ELTT)	5
Entry Requirements	5
Log Books	6
Secondary School Apprenticeship (SSA) and ACE-IT	6
Standardized Exams	6
Appendix A: Advisory Council on Construction Training Members	8
Appendix B: Steering Committee Members	9
Appendix C: Program Outline Working Group Members	10
Appendix D: Contractors Working Group Members and Notes	11
Appendix E: Regional Forums Schedule and Agenda	16
Appendix F: Notes from Regional Forums	17
Appendix G: Entry Assessment Sub-Committee	23
Terms of Reference	23
Notes	24
Appendix H: Standardized Exams and Certification Sub-Committee	26
Terms of Reference	26
Notes	27
Appendix I: Policy Issue Reviews	29
BC Certificate of Qualification	29
Challenge Exams	31
Curriculum Resources	33
Delivery Options	34
Entry Level Trades Training (ELTT)	36
Entry Requirements	38
Log Books	40
SSA and ACE-IT	42
Standardized Exams	44

Executive Summary

In 2003, a new National Occupational Analysis (NOA) was introduced for Construction Electrician, necessitating updates to the existing provincial apprenticeship training program. As a result, a new Electrician Program Outline for BC apprentices was developed to meet industry needs and standards in British Columbia, national standards for Red Seal and to address new technology.

The new Program Outline is one of three components of the Electrical Program Standards Project (EPSP), which was being managed by the BC Construction Association (BCCA) and its Advisory Committee on Construction Training (ACCT, see Appendix A), at the request of the Industry Training Authority (ITA). The Steering Committee of the EPSP (see Appendix B) reviewed the standards and curriculum of the existing program outline and embarked on the development of a new one with the help of industry and education representatives.

In addition to the development of a new Program Outline, there was a need to collect significant information and feedback from the electrical industry in BC. Finally, there were a number of policy issues that required consideration from industry for the ITA through this project, including such issues as certification, support, program delivery and testing.

Revise BC Electrician Program Outline

In the absence of an up-to-date and relevant Program Outline, industry and educators throughout the province struggle to produce results that meet provincial standards. As well, properly defined provincial standards are needed to meet national Red Seal certification. Appointed by the Steering Committee, the Program Outline Working Group (see Appendix C), led by a Curriculum Facilitator (see Figure 1) using the DACUM process, drafted an occupational analysis for British Columbia that was cross-referenced to the NOA and a new Program Outline for use by educators in technical training. The completed documents are outcomes-based and define competencies needed to be successful in the trade and in school. The Program Outline Working Group met at the British Columbia Institute of Technology during the week of June 6, 2005, and performed as a team to build the new documents. After obtaining feedback from educators and industry through surveys and forums, the changes were returned to the Program Outline Working Group for their final response. During the week of October 17, 2005, members of the Electrical Articulation Committee and two representatives from Industrial Electricians met to validate the final changes to the Program Outline and develop the testing Table of Specification. Finally, at their meeting on November 9, 2005, the Steering Committee signed off on the new Program Outline and recommended that the document should be transmitted to the ITA.



Figure 1 DACUM Session

Obtain Employer Feedback

Having drafted a new Program Outline, an important consideration in the project was to regain support and advice from employers and industry related to electrical training in the province. Unless they are starting their own business, graduates from vocational programs will be seeking employment from a wide variety of potential employers. These range from companies that have less than five employees to firms with hundreds of workers. Therefore it only makes good sense to have employers define the skills and abilities needed to accomplish their goals. As well, it makes sense to ensure that as many employers as possible are aware of new standards and recommend their acceptance of these. Therefore, distributing the results and convening small groups of interested employers in a variety of ways was a key process in validating the new Program Outline

A small group of contractors committed to supporting apprenticeship training in the province, the Contractors Working Group, was convened in Vancouver on July 25, 2005, to examine the draft



Figure 2 Regional Forum at Cranbrook, BC.

document and make recommendations (see Appendix D) to the project Steering Committee. Regional forums were scheduled (see Appendix E) and conducted throughout the province in September, 2005, to discuss (see Figure 2) the new Program Outline and address policy issues. Results (see Appendix F) were compiled and used by the Program Outline Working Group to validate the Program Outline and the Steering Committee in making recommendations about policy issues. A Stakeholder Survey was developed and distributed around the province by fax and email to the electrical industry. In addition, the BCCA maintained a website, <http://www.bccasn.com/epsp.html>, to share information on the project and gather information via an online version of the Stakeholder Survey. All the information gathered during the project was reviewed at monthly Steering Committee meetings convened to keep the project on task. The Steering Committee created two sub-committees to address some policy issues in more depth. The Sub-Committee on Entry Assessment (see Appendix G) met on August 19, 2005 and the Standardized Exams and Certification Sub-Committee (see Appendix H) met on August 30, 2005 to discuss their topics.

Policy Issues and Recommendations

In addition to approving the new Program Outline, the Steering Committee addressed a variety of policy issues related to electrical apprenticeship training in BC. A series of Policy Issue Review documents (see Appendix I) were prepared from the feedback obtained. These were discussed by the Steering Committee and during their meeting on December 6, 2005, they made

the recommendations on these issues available to the ITA for their consideration. Following are extracts from each of the Policy Issue Reviews and the recommendations of the Committee.

BC Certificate of Qualification

Currently, in order to obtain qualification to practise the electrical trade in British Columbia, an apprentice must first complete and pass the final exam in the fourth Level of technical training. Without a credential being offered, the apprentice must then score 70% or more in the Red Seal Interprovincial Examination. Successful completion on the IP exam results in the apprentice being provided the Certificate of Qualification on one side, and the Red Seal endorsement on the other side, of the awarded credential. The question was asked:

Should the Province of British Columbia award the Certificate of Qualification separately from the successful completion of the Red Seal examination?

After reviewing the results of feedback collected from around the province, the Steering Committee recommended...

...that BC maintain the current standard of awarding the Certificate of Qualification after the successful completion of the Interprovincial (Red Seal) examination.

Challenge Exams

There are different ways that tradespeople with existing training and experience are able to obtain equivalent standing with those enrolled in the basic apprenticeship program. One of these ways is to document existing time spent in a trade and successfully pass a theoretical examination of each Level of the apprenticeship program. A variation on challenging each Level is to write a one-time placement, or slotting, exam. Results of this exam, along with documented time spent in practice, would establish the acceptable Level of participation in the apprenticeship program. The question was asked:

Should a theoretical challenge examination for some, or all, of the apprenticeship Levels be available for equivalency purposes? Should a theoretical slotting, or placement, examination be used to establish the Level of participation in the apprenticeship program?

After reviewing the results of feedback collected from around the province, the Steering Committee recommended...

...that candidates with less than Red Seal requirements applying for BC credentials write a placement examination, including code questions, and the results will be used to establish the Level of participation in the apprenticeship program.

Curriculum Resources

Many factors support good education, including quality instructional resources. Individual handouts prepared by instructors, commercially published textbooks and modularized materials to support provincially identified competencies are various examples. In the past, provincial funding was made available to develop customized materials matching competencies identified for training. These materials were developed to support Canadian measurement and code standards, reduce the high cost of textbooks and provide provincial consistency in learning resources. The question was asked:

Should financial support be provided in order to update and maintain customized learning resources that ensure a province-wide standard for materials used by any training provider?

After reviewing the results of feedback collected from around the province, the Steering Committee recommended...

...that financial support should be provided by government to update and maintain learning resources that ensure a province-wide standard for materials used by any training provider.

Delivery Options

The rise of the effective use of the Internet along with improved computer graphics has opened a large number of new options to support educators and training. No longer is group-paced, instructor led, classroom-based teaching, supplemented by a written text, simple graphics and primitive video, the only effective method for guiding learning. Learning at a distance or computer-based training, supplemented by complex, simulated computer programming, are effective options to classroom-based instruction. Practical exercises, student and instructor safety, quality of curriculum resources, support from employers and student motivation are typical factors to be analyzed prior to choosing appropriate delivery options, especially alternative ones. The question was asked:

Should block release be the only method used to deliver in-school technical training for electrical apprentices?

After reviewing the results of feedback collected from around the province, the Steering Committee recommended...

...that the block release system of delivery be preferred as the method to deliver in-school technical training for electrical apprentices but, with appropriate quality controls, a cautious approach be taken to examine alternate delivery options.

Entry Level Trades Training (ELTT)

Entry Level Trades Training (ELTT) is a pre-employment program similar to the former, pre-apprenticeship program. Fundamental practical skills are covered in most ELTT programs, along with basic trade and academic requirements. Students in ELTT programs are not required to be indentured as apprentices. Rather, at graduation, some form of equivalency, generally Level 1, is granted in lieu of technical training when the employee is hired. In the past few years, ELTT programs around the province have varied in length and curriculum, often in response to needs of local industry. The question was asked:

Should ELTT programs be offered by training providers in BC and should these programs have a standardized length and curriculum?

After reviewing the results of feedback collected from around the province, the Steering Committee recommended...

...that ELTT programs offered by training providers in BC should have a standardized length and curriculum.

Entry Requirements

There are many routes to enter the trades and work for an employer in British Columbia. Trades training is one of these routes and can prepare potential employees for better success. Some students or beginning apprentices fail or fall behind in technical training because they lack or need to catch up with basic theoretical and practical skills. The question was asked:

Does industry want the ITA to establish, administer and enforce mandatory entry requirements for students reporting to technical training?

After reviewing the results of feedback collected from around the province, the Steering Committee recommended...

...that the ITA establish, administer and enforce mandatory entry requirements for students prior to registration as an apprentice giving the following routes into the trade:

- 1) ELTT graduate (within the past 5 years) of an electrical industry approved program, or***
- 2) Successful completion of an electrical industry approved entry assessment examination which would include items on relevant technical and mechanical aptitude, Principles of Mathematics 11 equivalencies, Physics 11 equivalencies, and English 12 or Communications 12 equivalencies, or***
- 3) Recent Grade 12 graduate (within the past 5 years) with demonstrated mechanical aptitude, Principles of Mathematics 11, Physics 11 and English 12 or Communications 12.***

Log Books

Maintaining performance records is an important part of an apprenticeship. On-the-job achievements as well as classroom successes are milestones in becoming a qualified Journeyperson. Currently school records are submitted to the AIMS program by educators but employers are not required to participate in assessment practices. Log books, listing all the skills learned on-the-job and at technical training, have been suggested as means to record accomplishments. The question was asked:

Should apprentices be issued and maintain Log Books that would list all learning and job competencies and be required to obtain appropriate sign-off by instructors and employers?

After reviewing the results of feedback collected from around the province, the Steering Committee recommended...

...that apprentices be issued a Log Book containing in-school and on-the-job competencies and apprentices be directed to obtain sign-off for each entry.

Secondary School Apprenticeship (SSA) and ACE-IT

The Secondary School Apprenticeship (SSA) and Accelerated Credit Enrolment in Industry Training (ACE-IT) programs provide secondary schools with financial support to deliver Level 1 apprentice technical training to high school students in collaboration with post-secondary providers. The programs also provide support for placement of program graduates in relevant employment-based training opportunities. The programs are available for the electrical trade. The question was asked:

Does industry want the ITA to establish provincial standards for SSA and ACE-IT programming for the electrical trade, providing they fit within the general policy parameters already established for the programs?

After reviewing the results of feedback collected from around the province, the Steering Committee recommended...

...that the electrical industry is supportive of ACE-IT and SSA programs provided they follow the established provincial standards for electrical programs.

Standardized Exams

Evaluations occur throughout the career of any apprentice, from theoretical testing in the school classroom to assessment of practical skills on-the-job by a Journeyperson. In technical training for electricians, 70% of the marks in each Level are awarded by the instructor for accomplishments in quizzes and labs. A final theoretical exam in each Level accounts for 30% of the grade. Are the final exams given in each institution for each Level exactly the same, therefore considered completely standardized? If so, is there more than one version of each exam?

Testbanks are electronic files of many test items coded to each competency and Learning Task of the Program Outline. Templates, or “blueprints” for exams, are constructed to extract random test items that match the competencies identified in the template. For example, four standardized templates can be created to extract items coded to those competencies and tasks identified for each Level in the Program Outline. Each time an examination is created using this template, the items on the exam will be randomly the same, or different, but will be testing the same competencies and tasks each time. The question was asked:

Should the same, standardized examination be used at the end of each Level for each apprentice or should a testbank of items with standardized templates be used to create the final Level examinations?

After reviewing the results of feedback collected from around the province, the Steering Committee recommended...

...that industry supports a standardized examination format across the province, including a testbank of items with standardized templates.

Appendix A: Advisory Council on Construction Training Members

Dana Francis - Khowtzun Mustimuhw Contractors Limited Partnership, PO Box 655, 200 Cowichan Way, Duncan, BC. (Chair)

Karen Bazylewski – Keith Plumbing & Heating Co. Ltd., 1 – 40 Gostick Place, North Vancouver, BC.

Sean Brock - PCL Constructors Westcoast Inc. , 310-13911 Wireless Way, Richmond, BC

Steve Butler - Competition Glass Ltd. , 555 Groves Avenue, Kelowna, BC.

Ken de Rooy – A-1 Machine & Welding, 4401 – 31st Street, Vernon, BC.

Danny Gallagher – Gallagher Bros. Contractors, 8740 Greenall Avenue, Burnaby, BC.

Bill Gyles – Kinetic Construction Ltd., 201 – 862 Cloverdale Avenue, Victoria, BC

Scott Jacob – JJM Construction, 891 Attree Road, Victoria, BC.

Ed Kozuki – Burgess Plumbing Heating & Electrical, 36N Broadway, Williams Lake, BC.

Ron McFee – Stuart Olson, 200 – 5200 Hollybridge Way, Richmond, BC.

Dan Mott – Mott Electric Ltd., P.O. Box 140, New Westminster, BC.

Rod Parker – Parker Johnston Roofing, 795 Vanalman Road, Victoria, BC.

Brian Savage - Wayne Watson Construction Ltd., 730 Third Avenue, Prince George, BC.

Ex Officio

Manley McLachlan, President - BCCA

Abigail Fulton, Vice President – BCCA

Appendix B: Steering Committee Members

Members:

Ron Fettback, Western Pacific Enterprises
Rod Goy, British Columbia Institute of Technology
Dan Mott, Mott Electric Ltd.
Peter Krause, Paragon Electrical Installations Ltd
Gerald Reinders, Granby Group of Companies

Ex Officio:

Mickey Bliss, Electrical Instructors Articulation Committee
Richard Campbell, Electrical Contractors Association of BC
Keith Dunbar, Project Manager
Abigail Fulton, BC Construction Association
Russ Robertson, Industry Training Authority
Geoff Stephens, Industry Training Authority

Appendix C: Program Outline Working Group Members

Industry Representatives:

Mario Baptista, Canem West Services
Brent Baptiste, Western Pacific Enterprises
Mike Baxter, Mott Electric Ltd.
Nick Bourassa, Lakewood Electric
Dan Campbell, Keldon Electric and Data Ltd.
Bill Card, Ross Morrison Electric
Larry Carriere, Keldon Electric and Data Ltd.
Dallas Crompton, Status Electrical Corp.
Jim Reaugh, Bridge Electric Corp.

Instructor Articulation Representatives

Stephen Sallaway, British Columbia Institute of Technology
John Todrick, University College of the Fraser Valley

Facilitators

Keith Dunbar
Sandy McGechaen

Appendix D: Contractors Working Group Members and Notes

July 25, 2005
Electrical Training Centre, BCIT

1. Introductions

The following participants, convened as the Contractors Working Group, reviewed the new draft Program Outline and discussed a variety of questions facing the Electrical trade in British Columbia:

John Arnott, Villa Electric
Werner Friesen, Bert's Electric
Eric Goodwin, Goodwin Industrial Electric
Rick Hauff, Houle Electric
Shaun Henneberry, Henneberry Electrical Contractors Ltd.
Bryan Killins, CE Corporate Electric Ltd.
Graham Trafford, Mott Electric Ltd.

2. Review strengths and weakness of present day workforce

The workforce is the labour pool in employment. The workforce has been under significant change in the past few years and as baby boomers enter retirement, it will undergo further changes. In general, the Contractors Working Group found a number of strengths within the current workforce, including:

- Although not always able to apply it, many new apprentices arrive with a better general education than in the past.
- Perhaps due to the information available on skill shortages, new apprentices are showing more interest with working in the trades.
- New applicants often demonstrate extra education or training credentials, such as a WHMIS or SOFA certificates, on their resumes.
- The overall rate of hiring is improving due to the strength of the construction economy which is a change to the “boom or bust” mentality.
- There has been an increase in the number of applicants wanting to obtain employment in the electrical trade although the quality of the applications is still not high enough.

In general, the Contractors Working group suggested the following weakness in the current workforce:

- There is a distinct lack of qualified workers in the workforce

- Many older workers in the workforce are somewhat disillusioned and are leaving the trade
- Many employers have a mindset that it is someone else's responsibility to take care of training.
- On entry, many applicants are lacking the essential skills that should be taught in high school.
- Those new applicants who arrive with some life experiences are more likely to succeed in the trade.
- In order to assist retention of workers, not enough pre-screening of applicants is being done.
- The content of our training does not appear to be keeping pace with the rate of technological change.
- There is a lack of financial incentive for companies to invest in training, such as a tax credit as offered in Ontario.

3. Review draft Program Outline

a) Changes from 2001 Edition

The draft Program Outline was distributed to the Contractors Working Group. Significant changes to the last edition of the Program Outline were tabled and discussed. Additions or increased emphasis included:

- PQ Analyzers
- Plan Time and Material
- Other Codes and Regulations
- Alternative Energy Sources
- Nurse Call Systems
- Building Automation Systems
- Sound Systems
- Entertainment Systems
- CATV systems

Deletions or decreased emphasis included:

- Construction of Analog Meters

b) Comparison to National Occupational Analysis (NOA)

The Contractors Working Group discussed the NOA chart showing where skills found in the draft Program Outline could be found.

c) Missing Content

As the complete document was only distributed at the meeting, participants had not been able to look at it in any depth. A quick review of the content resulted in the Contractors Working Group suggesting that the following items should be checked for inclusion in the outline. Additional items may be submitted after the meeting when the participants have had a chance to examine the document in detail.

- National Fire Protection Act (NFPA)

- Communication with electrical inspectors
- Radioactive lighting
- How BC laws, in general, relate to the work of electricians and their liabilities
- Adequate depth of coverage in electronics
- Troubleshooting skills

d) Discuss Theory vs. Practical

Since the length of the program is already contentious, it was thought that increasing the amount of practical work in the technical training would not be desirable. On the other hand, if possible, it was suggested that conduit bending should be taught and assessed in technical training to ensure that all new apprentices are consistently trained and tested in this area. There was also some discussion concerning whether a lab activity is considered practical, and not theory, and this would change the way it is presented in the Program Outline. It was recommended that clarification be sought from the Industry Training Authority.

e) Weightings by Line and Year

It was agreed that more time was needed to examine the document for recommendations on weightings. It was agreed that the participants would review the document following the meeting and would complete and submit the chart as soon as practical.

- 4. Discussion as to the standardization of examinations for Years 1 to 4 and**
- 5. Discussion of the Certification of Qualification and Red Seal certification processes and requirements**

In general, the Contractors Working Group agreed that employers needed to participate more in practical assessment and that practical assessments should mostly be done on the job. This would be consistent with competency based assessment practices. Competency based assessment is a system for assessing a person's knowledge and skills. Assessment is based on actual skills and knowledge a person can demonstrate in the workplace or in other relevant contexts. This is different from some other assessment systems which only measure knowledge and not the application of that knowledge.

A discussion was held on the current technical training assessment practices. The Contractors Working Group were generally satisfied with current assessment strategies and agreed that final level examinations for Years 1 to 3 were needed but should not represent 100 % of the apprentice's mark. Training providers should continue with quizzes and projects that currently used in their instruction. They also agreed that the use of standardized exams, still administered by the training providers, would be a useful practice. The Year 4 final examination should be expanded to include questions from Years 1 to 3 and, given this approach, the Year 4 exam would equal the trade's qualification and the Certificate of Qualification.

A prolonged discussion was held on challenging for trades qualification. In general, the Contractors Working Group was not convinced that the system of challenging provided them with a qualified workforce. The Contractors Working Group suggested that it was acceptable to

challenge for Years 1 and 2 given that proof of time and related work in the trade was provided, especially if it was with an electrical contractor. There should be no challenges permitted for Years 3 and 4 and challenges for the Certificate of Qualification should be limited to Canadian trained “travelers” from other provinces providing they submit appropriate apprenticeship documentation. Trades people trained outside of Canada, wishing full accreditation for their training or experience, could follow procedures required to write the Interprovincial Red Seal examination or challenge Years 1 and 2 of the BC system and complete Years 3 and 4 through the apprenticeship program.

Finally, there was unanimous agreement that BC should adopt a Log Book approach to keeping records for apprentices. The sample from Alberta was distributed and discussed as a good example.

6. Review of program delivery, including delivery methods, new techniques and logistical problems

There are a variety of ways that technical training could be delivered to apprentices. In essence, however, instruction can be organized through two distinct methods – group-paced or individualized. The attached chart, summarizing these methods, was presented in the context of discussing delivery strategies.

In general, the Contractors Working Group fully support the current group paced, instructor led approach of Block Release, although there was an appetite for a more blended approach given that appropriate financial and instructional support is provided. The Royal Roads University model was discussed, where students are in residence for a period of time in each year of their program but instruction also continues throughout the year using a distance education method. This approach was discussed given that employers are aware that some apprentices would like to spend less time away from their home and wages.

The Contractors Working Group wondered if a self-paced approach could be used in upgrading those that failed entry assessment. In general, the Contractors Working Group saw no great benefit to employers from those employed who had taken an Entry Level Trades Training program.

7. Review of problems associated with releasing apprentices for school

Current scheduling processes are causing significant problems for employers. Since no one in the system is consulting with employers concerning the scheduling of technical training, employers are having increased problems in planning some jobs and projects. Technical training needs to be scheduled during an employer’s “down time” although it was recognized that this can vary across the province. The Contractors Working Group was unanimous in their agreement that back-to-back training sessions are bad. Since the current approach is leaving control of scheduling in the hands of apprentices, more widespread use of consent forms to the employers might help with making arrangements. In essence, those making decisions about when technical training sessions are being scheduled, when any additional openings occur or

when short term replacements could be available should be consulting with the employers as part of the process.

8. Review of assessment at entry into apprenticeship

In general, the Contractors Working Group supported the use of entry assessment into the trade as an improvement to the quality of the candidates that are entering the workforce. The Contractors Working Group agreed that an upgrading program to obtain skill sets that are seen as missing through the entry assessment procedures would provide more competent apprentices and strengthen technical training. This is in keeping with the points they made under weakness in the workforce.

Appendix E: Regional Forums Schedule and Agenda

AGENDA

Welcome and Introductions	(EPSP Steering Committee Representative)
Overview of the Project	(EPSP Steering Committee Representative)
Message from the Industry Training Authority	(ITA Representative)
Program Outline Discussion	(Keith Dunbar)
Policy and Training Issues Discussion	(Keith Dunbar)

* Light Refreshments will be served *

Table Handouts:

Agenda
Response Survey
Program Outline Extract

Locations and Times

Victoria, Tuesday September 13, (Evening Meeting)
Room 124A, Campus Centre, Interurban Campus, Camosun College, 4461 Interurban Rd, 4:00 – 6:00 PM

Parksville, Wednesday, September 14, (Afternoon meeting)
Salon A, Tigh-Na-Mara Resort, 1155 Resort Drive, 3:00 – 5:00 PM

Cranbrook, Tuesday September 20, (Breakfast meeting)
Boardroom, College of the Rockies, 2700 College Way, 7:30 - 9:30 AM

Kelowna: Wednesday September 21. (Breakfast meeting)
InFusions Cafeteria, Okanagan College, 1000 KLO Road, 8:00 - 10:00 AM

Kamloops: Wednesday September 21. (Evening Meeting)
TT219, Trades and Technology Building, Thompson Rivers University, 900 McGill Road, 4:00 - 6:00 PM

Vancouver: Thursday September 22. (Breakfast meeting)
Boardroom, Vancouver Regional Construction Association, 3636 East 4th Ave., 7:30 - 9:30 AM

Prince George: Tuesday, September 27. (Evening meeting)
Boardroom, Northern British Columbia Construction Association, 3851-18th Avenue, 4:30 - 6:30 PM

Appendix F:

Notes from Regional Forums

Victoria

Present: Apprentice 0, Educator 4, Contractor 4, Labour 0, Inspector 0, Government 1

Program Outline Notes

- No entries are under the Practical Heading. Should the headings change or should labs be considered Practical?
- Is the “building envelope” perspective included in the curriculum? If not, G-3 could be a place to put it.
- National Building Code is an important code to emphasize.
- Could check that the word “standards” is added to the code section.
- The introduction to the Program Outline could stress that the practical parts of the electrical trade are done and tested on-the-job. The current presentation of the Program Outline does not show the practicality of the trade.
- Communication skills, especially English as a Second Language, are becoming more important as immigrants enter the trade.

Policy Notes

- ELTT or assessment procedures should ensure that those entering the trade are aware of height requirements found in working conditions, such as the use of ladders. Other working conditions should be examined as well.
- Chemistry is a subject that could be considered as a prerequisite as it can assist learners with formulas.
- Physics may be too strict as a prerequisite and might be better left as a recommended subject.
- How do we counsel “good trades people” who do not have “book smarts”?
- Some students are being issued an apprenticeship number through AIMS and are not employed in the trade. AVED is covering this apprenticeship for WCB but only while they are in school. (NIC is using this system to register students into the AIMS system).
- Rules of sponsorship have changed, especially because of joint boards.
- It is possible to obtain Levels 1, 2 and 3 of technical training but not have practical experience. This may be blocking existing apprentices from registering for timely technical training.
- Counsellors are needed to support apprentices in registering for training.
- Perhaps a computer program which tracks apprentices could be used in scheduling. At present, colleges do not have access to all AIMS data needed to schedule training.
- The Log Book concept could be a tool in scheduling. For example, apprentices would need to show hours of work employed before scheduling the next level of training.
- As a delivery option, front end loading not supported.

- Industry was supportive of SSA and ACE-IT and saw the use of Parent Advisory Committees as a good promotional option for trades training.
- Labour said NO to a separate Certificate of Qualification
- There was support for a standardized 4th Level exam that leads to the Certificate of Qualification being awarded and then the IP would be written.

Parksville

Present: Apprentice 0, Educator 2, Contractor 1, Labour 0, Inspector 0, Government 1

Program Outline Notes

- Weightings may need to be adjusted to accommodate school training times.
- Some prerequisite materials need further analysis and discussion
- It may be necessary to examine and re-adjust the time allocations.
- It might be useful to further examine what is considered “practical” and what is “theory”.
- It might be a good idea to include conduit bending into the technical training.
- Some of the specialty topics might be better learned after the basics of apprenticeship but technical training time should not be shortened.
- An industry-driven journeyman upgrading program would raise the level of training without creating changes in the standard apprenticeship program.

Policy Notes

- Not everything is based on passing the IP for qualification. Apprentices must pass 4th year training plus all previous years of training.
- Some consideration should be taken to ensure that all apprentices obtain practical experience in each of the practical competency skills.
- Some thought of supporting wholesalers as part of the apprenticeship system, such as wage support, could be used.

Cranbrook

Present: Apprentice 0, Educator 3, Contractor 5, Labour 1, Inspector 0, Government 1

Program Outline Notes

- Changing technology, such as PLCs, should be a major focus of changes to the curriculum.

Policy Notes

- The IBEW indicated that some problems may be encountered in dividing the trade, especially if there are shutdowns and those affected only have specialized skills
- The IBEW supports the IP model.

- Some Industrial Electrician apprentices are not being challenged by the current technical training curriculum. BC Hydro wondered if there could be supplementary training in between technical training sessions.
- Are there any thoughts to making a general common core and then creating separate specialty endorsements, such as mine, petro chemical, etc.?
- Entrance requirements are important but care should be taken in limiting entry to the trade.
- Technological programs have filled some gaps in new technology training.
- The elimination of apprenticeship counsellors has created many difficulties in solving problems.
- Have local construction associations considered local training committees in various trade areas?
- Educators at College of the Rockies would support a provincial testbank.
- One industry representative wanted standardized level exams administered outside the classroom.
- BC Hydro supports trades upgrading to keep pace with new technology and industry needs to step up to the plate in this area.
- There is a gap occurring when Industrial Electrician journeymen retire and existing Construction Electrician need to be brought up to speed. Some upgrading training could be considered to close this gap.
- Increased maintenance and troubleshooting skills, especially to serve Industrial Electrician, could be achieved by increasing the current split of 70/30 for theory/labs to 60/40.
- There was a discussion, but no conclusion, about insisting on ELTT as a prerequisite and then still having 4 sessions of technical training.
- There was unanimous support of the current IP model of certification.

Kelowna

Present: Apprentice 0, Educator 2, Contractor 5, Labour 0, Inspector 0, Government 1

Program Outline Notes

- There was a suggestion to reduce the percentage of time allocated to analog meters
- Data has become a larger part of the trade along with automation. Consider increasing the percentage of time and/or add some of it to 3rd Year and reduce low voltage.
- Consider having all basic computer skills as a prerequisite.

Policy Notes

- It is people outside of the trade who promote specializing the trade.
- Okanagan College Program Advisory Committee was in strong favour of NOT watering down the trade.
- It is useful to have prerequisite testing of mechanical aptitude.
- Technical training should reinforce OTJ skills of “following instructions”.
- Consider having the employer report given just prior to the next level of technical training.

- Time and competence in the trade is important if allowing challenges. Slotting exams work well, too.
- Unanimous industry support for the current IP process but good support to see a Certificate of Qualification for successful completion of the 4th Level.
- Alternate delivery is generally support as complementary to block release which is still the most accepted practice for technical training.

Kamloops

Present: Apprentice 4, Educator 8, Contractor 1, Labour 1, Inspector 1, Government 1

Program Outline Notes

- Some thoughts that basic computer skills, including almost all of A-6, but not PLCs, could be made prerequisite.
- The inspector suggested that “equipment approval” should be part of the curriculum.

Policy Notes

- Industrial Electrician was tossed previously – mobility was a significant reason for this – was too restrictive
- Obtaining a Construction Electrician IP ensures mobility without being restrictive
- Endorsement program was not accepted by the previous Provincial Apprenticeship Board in the 90’s but this could be a current strategy.
- There was overall support that completing 4 years successfully and passing the IP would give the Certificate of Qualification then the IP endorsement as is being done today.
- There was concern raised that colleges are not receiving information on their success rates for the IP.
- Apprentices attending the session felt the wait for entry into ELTT was worth it. At completion, they got a job and did the 2nd Level of technical training with less difficulty.
- Provincial scheduling would be necessary to change from block release.
- Apprentices are not being told about other institutions offering technical training when running into waitlists of 2 or 3 years where they are applying.
- Creative use of BCCampus could solve scheduling issues.
- Apprentices are frustrated at applying to 5 or 6 sites with waitlists and then receiving the call from one of them only days before the class begins.
- Both apprentices and industry support standardized exams and modular curriculum across the province. Some institutions are using texts, not modules.
- Apprentices indicated that lab work and the weighting do not appear to be standard across the colleges.
- It was suggested that checklists for skills to be learned in labs would help the apprentices know what is expected and standardize labs between colleges.
- The use of “paid employment” is a restrictive practice in the SSA program.

Vancouver

Present: Apprentice 4, Educator 4, Contractor 1, Labour 5, Inspector 1, Government 2

Program Outline Notes

- Educators had some concern that training on PLCs had been reduced from 12% to 3%, or 6 days to 1.5 days. As well, their analysis noted that industrial percentage had dropped from 51% to 16%.
- Important to make sure motor theory is still in the curriculum and that the percentage of time for PLCs is at least the former level.

Policy Notes

- A list of potential users that were not contacted about the project or the review process and who may not be aware of the changes was presented by Ted Simmons who agreed to provide an electronic copy of the list.
- It was noted that more independent power producers are around and they may not be in the communication loop.
- The trade and training need to remain broad scoped
- Important to adequately prepare tradespeople to proper safety issues.
- Some discussion indicated that with improvements and changes to the IP process there may not need to be a need for a separate Certificate of Qualification
- Inspectors see the Certificate of Qualification as one step higher than the IP which they see as a minimal, “across the country” standard.
- Common core becomes more critical if standardized exams are used.
- Apprentices at this session showed concern that training should ensure mobility.
- It was noted that specialized training also complements mobility.
- If Log Books are to be adopted, who is going to monitor that results are obtained?
- It was suggested that the “skeleton” of AIMS could be opened to employers for school reports.
- The inspector noted that log books are an option if the ITA has a quality management system.
- Difficulty of maintaining log books was noted.
- There was discussion that suggested that, in general, ELTT has been successful as a measure of continued success in apprenticeship. The question was asked, however, about statistics available on ELTT grads and their success rates in apprenticeship.
- An information system on proposed changes that used to be available through the TAC’s was suggested.
- There was a request to extend the deadline for feedback.

Prince George

Present: Apprentice 0, Educator 3, Contractor 5, Labour 0, Inspector 1, Government 1

Program Outline Notes

- There is no need for apprentices to be able to build computers.

- Do apprentices understand the legalities carried onto each job site by a journeyperson?

Policy Notes

- Common testing between all apprentices to ensure portability.
- Basic training is what is required and no specialized equipment is required.
- There was prolonged discussion about making ELTT a prerequisite for employment in the trade and still retain 4 years of technical training.
- Good support to moving basic information (or all) out of 1st Year (e.g. Ohms Law) into a prerequisite program of 10 weeks or a placement exam.
- If hiring a new employee, an equal demonstration of theoretical and practical skills, such as bending conduit, is a bonus.
- Using new technology of education could help in reducing the time required for technical training.
- No reason to change the current system of getting your Certificate of Qualification through successfully completing the IP
- Using a Log Book forces industry to help evaluate the performance of apprentices. “Checking” all the items should not be mandatory.
- Apprentices should be responsible for maintaining Log Books and there should be no need for employers or government to “baby sit” this function.
- Industry is supportive of SSA and ACE-IT, although equivalency standards should be in place. CTC is popular in Prince George. It was noted that high schools must make a deal with colleges for the use of trades people for instruction.

Appendix G: Entry Assessment Sub-Committee

Terms of Reference

The BC Construction Association (BCCA) is managing a project for the Industry Training Authority (ITA) to update standards in the construction industry for the electrical trade. In order to accomplish the task, BCCA has established a Steering Committee, and appropriate sub-committees, to assist in providing overall project direction. The general purpose of the Entry Assessment Sub-Committee is to provide recommendations and advice to the BCCA Steering Committee on entry requirements that lead to successful participation in an apprenticeship and as a member of the electrical trade.

Functions:

- Discuss appropriate prerequisites that would be required to obtain entry to the trade, such as mathematic and science levels, mechanical aptitude and essential skills;
- Discuss and recommend testing strategies and areas to be included in an assessment process;
- Discuss and recommend procedures for administering and up-dating the exam and record keeping;
- Examine and recommend log book requirements and format.

Formats

The Entry Assessment Sub-Committee will meet face-to-face, at least once, to discuss and make recommendations. A member of the Steering Committee will chair the meeting(s). If required, additional interaction may occur through face-to-face meetings, teleconferencing or e-mail.

Entry Assessment Sub-Committee Member Appointments:

Members of the Entry Assessment Sub-Committee will be appointed by the Steering Committee.

Reporting

Results from all the meetings will be recorded and submitted to the Steering Committee for further discussion and action.

Notes

Entry Assessment Sub-Committee
August 19, 2005

In Attendance:

Andy Cleven, Ron Fettback, Brenden Farrell, Rod Goy, Gerry Reinders

Regrets:

Mickey Bliss, Russ Robertson

Notes:

Keith Dunbar

Rod distributed the entrance exam previously used by the province and generally used by the ELTT programs to assess math and science knowledge for electrical students interested in entering the trade. Good and bad points of previous use were noted. On the plus side, 95% of those who passed this exam were able to complete Level One of the apprenticeship and the theoretical concepts needed there. On the negative side there was no test of practical abilities. It was noted that it was difficult to administer and regulate, especially with those who failed it. It was also noted that those who did not pass the exam were directed to study five booklets that would help them prepare for the exam and some success was achieved through the use of these materials.

Gerry and Ron indicated that their businesses give preference to hiring graduates of ELTT programs. Employees hired with an ELTT certificate are granted school credit but are still required to complete four years of time. Andy suggested that industry needs to have some discussions and make some decisions on the ELTT program. His program is 25 weeks, including 10 weeks of hands-on practice. General sub-committee discussion indicated that ELTT is preferred, but not mandatory.

Some further discussion resulted in three recommended entry routes into the trade:

- 4) ELTT graduate (within the past 5 years) of an electrical industry approved program, or
- 5) Successful completion of an electrical industry approved entry assessment examination which would include items on relevant technical and mechanical aptitude, Mathematics 11 equivalencies, Physics 11 equivalencies, and English 12 or Communications 12 equivalencies, or
- 6) Recent Grade 12 graduate (within the past 5 years) with Mathematics 11, Physics 11 and English 12 or Communications 12.

The sub-committee also recommended that the Industry Training Authority establish a permanent committee to establish and maintain the details of programs, standards and certification.

There was also discussion on the use of log books as a record of performance. Some thoughts were provided on the difficulty of keeping them up-to-date and on the overall value of them to apprentices and employers. On top of the school reports, there was discussion on the need for

information to be recorded on the job performances. In the end, the sub-committee recommended that apprentices be tracked on an annual employment update.

Appendix H: Standardized Exams and Certification Sub-Committee

Terms of Reference

The BC Construction Association (BCCA) is managing a project for the Industry Training Authority (ITA) to update standards in the construction industry for the electrical trade. In order to accomplish the task, BCCA has established a Steering Committee, and appropriate sub-committees, to assist in providing overall project direction. The general purpose of the Standardized Exams and Certification Sub-Committee is to provide recommendations and advice to the BCCA Steering Committee on the need for standardized assessment between levels of apprenticeship training, the need for a provincial Certificate of Qualification and requirements permitting challenges to trade certification.

Functions:

- Discuss appropriate assessment procedures currently being practiced in apprenticeship training;
- Discuss and recommend whether standardized tests or testing templates should be used between apprenticeship training providers;
- Discuss and recommend whether industry supports a provincial Certificate of Qualification without the need to write the Interprovincial Standards (Red Seal) examination;
- Discuss and recommend whether industry needs or supports challenges to levels of apprenticeship or a trade qualification.

Formats

The Standardized Exams and Certification Sub-Committee will meet face-to-face, at least once, to discuss and make recommendations. A member of the Steering Committee will chair the meeting(s). If required, additional interaction may occur through face-to-face meetings, teleconferencing or e-mail.

Standardized Exams and Certification Sub-Committee Member Appointments:

Members of the Standardized Exams and Certification Sub-Committee will be appointed by the Steering Committee.

Reporting

Results from all the meetings will be recorded and submitted to the Steering Committee for further discussion and action.

Notes

August 30, 2005

In Attendance:

Mickey Bliss, Rod Goy, Peter Krause, Dan Mott, Russ Robertson

Notes:

Keith Dunbar

The Terms of Reference were reviewed. As a starting point, the sub-committee noted the differences between standardized tests, standardized testing templates and test item banks.

Mickey noted that colleges are currently using “standardized templates” in creating their exams even though they are not drawing from the same bank of coded questions. Using the articulation process, he suggested that the current testing process has resulted in similar outcomes at the various colleges. Mickey further suggested that it was possible to establish an exam bank for all colleges and institutes to use, controlled by the colleges and BCIT and administered by the college system. It was agreed that Mickey would discuss this concept with articulation members and Thompson Rivers University, who might be interested and able to manage this process.

Dan asked whether the ITA wants to manage the testing process or wishes to ensure that good standards are in place. Russ indicated that good standards are a priority for the ITA. Dan noted that he wanted to make sure that apprentices are able to transfer from one college to another and be able to pass the “same” or a “similar” exam at each location. It was suggested that two representatives from electrical contractors could attend the annual articulation meeting. Each appointment could be staggered and last for a two year or three year period. These appointments could be made through the Electrical Contractors Association, including non-union and union representatives.

A discussion was held around challenging for levels and for certification. It was suggested that the colleges could be approached to create challenge exams that could be used by the ITA. The use of placement exams, rather than challenge exams for Years One and Two, was discussed. Then the use of one placement exam for all levels from One to Three was proposed. Although it would be hard to design, it would be more effective. Code should be segregated from this exam, so a separate code exam would be required. If a candidate passed the placement exam they would then write the code exam. No rewrites of a placement exam would be allowed. It was agreed that six standardized testing templates would be needed -- one for each level, one for the placement assessment and one for the code assessment. It was also mentioned that the colleges would be able to easily offer and invigilate the placement and code tests because they already perform this task, including other kinds of placement testing.

It was agreed that the current system of awarding the Certificate of Qualification through the successful completion of the Interprovincial Red Seal exam be continued.

The sub-committee agreed that the log book process does not appear to be a manageable bureaucracy. It was mentioned that up to 50 % of apprentices have not yet attended any technical training and, therefore, no school or employer records exist for these apprentices.

It was agreed that another meeting may be required to complete the Terms of Reference but this would be decided after a review of the notes.

Appendix I: Policy Issue Reviews

BC Certificate of Qualification

Background

Currently, in order to obtain qualification to practise the electrical trade in British Columbia, an apprentice must first complete and pass the final exam in the fourth Level of technical training. Without a credential being offered, the apprentice must then score 70% or more in the Red Seal Interprovincial Examination. Successful completion on the IP exam results in the apprentice being provided the Certificate of Qualification on one side, and the Red Seal endorsement on the other side, of the awarded credential.

The Issue

Should the Province of British Columbia award the Certificate of Qualification separately from the successful completion of the Red Seal examination?

Notes from the Program Outline Working Group

- The Working Group endorsed the current process.

Notes from the Sub-Committee on Standardized Examinations and Certification

It was agreed that the current system of awarding the Certificate of Qualification through the successful completion of the Interprovincial Red Seal exam be continued.

Notes from the Regional Forums

Cranbrook

- The IBEW supports the IP model.
- There was unanimous support of the current IP model of certification.

Kamloops

- There was overall support that completing 4 years successfully and passing the IP would give the Certificate of Qualification then the IP endorsement as is being done today.

Kelowna

- Unanimous industry support for the current IP process but good support to see a Certificate of Qualification for successful completion of the 4th Level.

Prince George

- No reason to change the current system of getting your Certificate of Qualification through successfully completing the IP

Vancouver

- Some discussion indicated that with improvements and changes to the IP process there may not need to be a need for a separate Certificate of Qualification
- Inspectors see the Certificate of Qualification as one step higher than the IP which they see as a minimal, “across the country” standard.

Victoria

- Labour said NO to a separate Certificate of Qualification
- There was support for a standardized 4th Level exam that leads to the Certificate of Qualification being awarded and then the IP would be written.

Notes from the Stakeholder Surveys

Q9. Currently the BC Certificate of Qualification (C of Q) for this trade is obtained through writing the Interprovincial (Red Seal) exam. Does industry support a provincial C of Q without the need to write the Interprovincial Standard (Red Seal) exam?

- No (7)
- No, we need to promote a uniform standard that is not subject to change unilaterally.
- No, I believe IP certification is a must.
- No, the IP should be the standard.
- No, everybody should write the red seal.
- No must keep the standards up and have IP.
- No, this should be a Canadian standard.
- Not for new apprentices, only for those seeking qualification recognition for employment from outside this country.
- I believe that is how it is done with other trades. The Interprovincial is supposed to be an equivalency exam to work in other provinces, it was never meant to be used as a C of Q exam.

Recommendation

The Steering Committee recommends that BC maintain the current standard of awarding the Certificate of Qualification after the successful completion of the Interprovincial (Red Seal)

Challenge Exams

Background

There are different ways that tradespeople with existing training and experience are able to obtain equivalent standing to those participating in the basic apprenticeship program. One of these ways is to document existing time spent in a trade and successfully pass a theoretical examination of each Level of the apprenticeship program. A variation on challenging each Level is to write a one-time placement, or slotting, exam. Results of this exam, along with documented time spent in practice, would establish the acceptable Level of participation in the apprenticeship program.

The Issue

Should a theoretical challenge examination for some, or all, of the apprenticeship Levels be available for equivalency purposes? Should a theoretical slotting, or placement, examination be used to establish the Level of participation in the apprenticeship program?

Notes from the Program Outline Working Group

The Program Outline Working Group did not comment on challenge exams.

Notes from the Contractors Working Group

- A prolonged discussion was held on challenging for trades qualification. In general, the Contractors Working Group was not convinced that the system of challenging provided them with a qualified workforce. The Contractors Working Group suggested that it was acceptable to challenge for Years 1 and 2 given that proof of time and related work in the trade was provided, especially if it was with an electrical contractor. There should be no challenges permitted for Years 3 and 4 and challenges for the Certificate of Qualification should be limited to Canadian trained “travelers” from other provinces providing they submit appropriate apprenticeship documentation. Trades people trained outside of Canada, wishing full accreditation for their training or experience, could follow procedures required to write the Interprovincial Red Seal examination or challenge Years 1 and 2 of the BC system and complete Years 3 and 4 through the apprenticeship program.

Notes from the Regional Forums

Kelowna

- Time and competence in the trade is important if allowing challenges. Slotting exams work well, too.

Victoria

- It is possible to obtain Levels 1, 2 and 3 of technical training but not have practical experience. This may be blocking existing apprentices from registering for timely technical training.

Notes from the Stakeholder Surveys

Q10. Do you have any concerns or comments about the practice of allowing challenges to levels of apprenticeship or trade qualifications?

- No, equivalent standards should be ensured via both a written and practical exam. This would require consultation with all stakeholders.
- No (1)
- Yes. I feel the challenger needs to have the appropriate hands-on experience and not just theoretical knowledge.
- Only should be allowed on Year 1 and Year 2 unless out-of-country tradesman.
- As long as the individual has put in the required time in the trade.
- Should only be able to challenge 1st Year.
- No challenges should be allowed.
- Challenges should only be allowed to Level 2, then only after the proper credentials are provided.
- I feel challenges in general shouldn't be allowed, only allowed for rare cases.
- 1st or 2nd Levels OK.
- As long as the people can prove they worked at the Electrical Trade and the reintroduction of compulsory certification would take care of the future.

Recommendation

The Steering Committee recommends that candidates with less than Red Seal requirements applying for BC credentials write a placement examination including code questions and

Curriculum Resources

Background

Many factors support good education, including quality instructional resources. Individual handouts prepared by instructors, commercially published textbooks and modularized materials to support provincially identified competencies are various examples. In the past, provincial funding was made available to develop customized materials matching competencies identified for training. These materials were developed to support Canadian measurement and code standards, reduce the high cost of textbooks and provide provincial consistency in learning resources.

The Issue

Should financial support be provided in order to update and maintain customized learning resources that ensure a province-wide standard for materials used by any training provider?

Notes from the Program Outline Working Group

The Program Outline Working Group did not comment on curriculum resources.

Notes from the Contractors Working Group

The Contractors Working Group did not comment on curriculum resources.

Notes from the Regional Forums

Kamloops:

- Both apprentices and industry support standardized exams and modular curriculum across the province. Some institutions are using texts, not modules.

Notes from the Stakeholder Surveys

There were no comments on the surveys about curriculum resources.

Recommendation

The Steering Committee recommends that financial support should be provided by government to update and maintain learning resources that ensure a province-wide standard

Delivery Options

Background

The rise of the effective use of the Internet along with improved computer graphics has opened a large number of new options to support educators and training. No longer is group-paced, instructor led, classroom-based teaching, supplemented by a written text, simple graphics and primitive video, the only effective method for guiding learning. Learning at a distance or computer-based training, supplemented by complex, simulated computer programming, are effective options to classroom-based instruction. Practical exercises, student and instructor safety, quality of curriculum resources, support from employers and student motivation are typical factors to be analyzed prior to choosing appropriate delivery options, especially alternative ones.

The Issue

Should block release be the only method used to deliver in-school technical training for electrical apprentices?

Notes from the Program Outline Working Group

- The Working Group endorsed the block release system of delivery.

Notes from the Contractors Working Group

- In general, the Contractors Working Group fully supported the current group paced, instructor-led approach of Block Release, although there was an appetite for a more blended approach given that appropriate financial and instructional support is provided.

Notes from the Regional Forums

Kelowna

- Alternate delivery is generally supported as complementary to block release which is still the most accepted practice for technical training.

Prince George

- Using new technology of education could help in reducing the time required for technical training.

Victoria

- As a delivery option, front end loading is not supported.

Notes from the Stakeholder Surveys

Q17. Currently block release is the main delivery method for apprentice technical training.

Would you support alternate delivery methods and if so, what would they be?

- No (3), No, block release works for us as long as we get advanced notice from institutions, No, keep as at present.
- I can't think of an alternate method I would support.
- Computer-based
- Perhaps self-paced
- Because of the number of hours involved for electrical, alternate methods are difficult. None would work for apprentices in community where no training facility exists. Even 1 day a week (7.5 hr day) is 40 weeks of school per year. Given the mobile nature of our

work force many employers could have trouble keeping the apprentice working close enough to the training facility for such a long period of time. Some theory could be delivered via interactive web-based training to shorten the block time but the practical lab/equipment time must be delivered at a training facility with such equipment.

- What are block release methods
- Do not know enough to recommend.
- Block release has worked well. Students need time to complete the technical portion and evenings and weekends should be used to study.

Recommendation

The Steering Committee recommends that the block release system of delivery be preferred as the method to deliver in-school technical training for electrical apprentices but with

Entry Level Trades Training (ELTT)

Background

Entry Level Trades Training (ELTT) is a pre-employment program similar to the former, pre-apprenticeship program. Fundamental practical skills are covered in most ELTT programs, along with basic trade and academic requirements. Students in ELTT programs are not required to be indentured as apprentices. Rather, at graduation, some form of equivalency, generally Level 1, is granted in lieu of technical training when the employee is hired. In the past few years, ELTT programs around the province have varied in length and curriculum, often in response to needs of local industry.

The Issue

Should ELTT programs be offered by training providers in BC and should these programs have a standardized length and curriculum?

Notes from the Program Outline Working Group

The Program Outline Working Group did not comment on ELTT.

Notes from the Contractors Working Group

- In general, the Contractors Working Group saw no great benefit to employers from those employed who had taken an Entry Level Trades Training program.

Notes from the Entry Assessment Sub-Committee

- Gerry Reinders and Ron Fettback indicated that their businesses give preference to hiring graduates of ELTT programs. Employees hired with an ELTT certificate are granted school credit but are still required to complete four years of time. Andy Cleven suggested that industry needs to have some discussions and make some decisions on the ELTT program. His program is 25 weeks, including 10 weeks of hands-on practice. General sub-committee discussion indicated that ELTT is preferred, but not mandatory.

Notes from the Regional Forums

Cranbrook

- There was a discussion, but no conclusion, about insisting on ELTT as a prerequisite and then still having 4 sessions of technical training.

Kamloops

- Apprentices attending the session felt the wait for entry into ELTT was worth it. At completion, they got a job and did the 2nd Level of technical training with less difficulty.

Prince George

- There was prolonged discussion about making ELTT a prerequisite for employment in the trade and still retain 4 years of technical training.

Vancouver

- There was discussion that suggested that, in general, ELTT has been successful as a measure of continued success in apprenticeship. The question was asked, however, about statistics available on ELTT grads and their success rates in apprenticeship.

Notes from the Stakeholder Surveys

Q13. Do you have any comments about the current Entry Level Technical Training (ELTT) program for the electrical trade?

- No (4)
- Need more space
- Should provide basic theoretical and practical knowledge for those starting out and not to take or duplicate the training taken in 1st Year
- Pre-apprenticeship is good training
- Overall ELTT is good but it should be shortened in length to help reduce it's funding
- Excellent program to deliver employment type skills
- Standardize provincially from 12 to 14 months in length
- More advertising. It is a great way to introduce the trade to our young students

Q14. Does industry hire graduates from the ELTT program?

- Don't know (2)
- Yes (4)
- Not as a practice
- Not a practice here but it does happen
- Not applicable
- Yes, and they are very successful

Recommendation

The Steering Committee recommends that ELTT programs offered by training providers in BC should have a standardized length and curriculum.

Entry Requirements

Background

There are many routes to enter the trades and work for an employer in British Columbia. Trades training is one of these and can prepare potential employees for better success. Some students or beginning apprentices fail or fall behind in technical training because they lack or need to catch up with basic theoretical and practical skills.

The Issue

Does industry want the ITA to establish, administer and enforce mandatory entry requirements for students reporting to technical training?

Notes from the Program Outline Working Group

The Program Outline Working Group supported the use of enforced prerequisites.

Notes from the Contractors Working Group

- In general, the Contractors Working Group supported the use of entry assessment into the trade as an improvement to the quality of the candidates that are entering the workforce. The Contractors Working Group agreed that an upgrading program to obtain skill sets that are seen as missing through the entry assessment procedures would provide more competent apprentices and strengthen technical training. This is in keeping with the points they made under weakness in the workforce.

Notes from the Sub-Committee on Entry Assessment

- Rod Goy distributed the entrance exam previously used by the province and generally used by the ELTT programs to assess math and science knowledge for electrical students interested in entering the trade. Good and bad points of previous use were noted. On the plus side, 95% of those who passed this exam were able to complete Level 1 of the apprenticeship and the theoretical concepts needed there. On the negative side there was no test of practical abilities. It was noted that it was difficult to administer and regulate, especially with those who failed it. It was also noted that those who did not pass the exam were directed to study five booklets that would help them prepare for the exam and some success was achieved through the use of these materials.
- Some further discussion resulted in three recommended entry routes into the trade:
 - 7) ELTT graduate (within the past 5 years) of an electrical industry approved program, or
 - 8) Successful completion of an electrical industry approved entry assessment examination which would include items on relevant technical and mechanical aptitude, Mathematics 11 equivalencies, Physics 11 equivalencies, and English 12 or Communications 12 equivalencies, or
 - 9) Recent Grade 12 graduate (within the past 5 years) with Mathematics 11, Physics 11 and English 12 or Communications 12.

Notes from the Regional Forums

Victoria

- ELTT or assessment procedures should ensure that those entering the trade are aware of height requirements found in working conditions, such as the use of ladders. Other working conditions should be examined as well.
- Chemistry is a subject that could be considered as a prerequisite as it can assist learners with formulas.
- Physics may be too strict as a prerequisite and might be better left as a recommended subject.

Cranbrook

- Entrance requirements are important but care should be taken in limiting entry to the trade.

Kelowna

- It is useful to have prerequisite testing of mechanical aptitude.

Notes from the Stakeholder Surveys

Q11. Should trainees wishing to enter this trade be required to meet set standards in areas such as mathematics, science, mechanical aptitude and essential skills abilities? If so, should there be both practical and theoretical assessments for these requirements?

- Yes, via both a written and practical test
- Yes (2)
- No (1)
- Just theoretical
- Theoretical basis only
- Academic math and Physics 12
- Absolutely
- Definitely on the academic part, the mechanical skills will be tested on the job
- Definitely, theoretical assessments should be done
- Yes, Physics 11, Math 11 or 12, English 12 or equivalent and physically fit

Q12. If entrants to the trade are to be assessed for standard entrance requirements who should design, administer and update the process?

- The ITA with consultations with stakeholders
- Program instructors (2)
- The institute the student is applying to
- Government apprenticeship representative board to review applications
- Apprenticeship branch (2)
- Teachers who give 1st Year
- The standards should be set by the ITA but the screening should be done by the employer
- Someone at the provincial level to design and colleges could administer and update

Recommendation

The Steering Committee recommends that the ITA establish, administer and enforce mandatory entry requirements for students prior to registration as an apprentice giving the

Log Books

Background

Maintaining performance records is an important part of an apprenticeship. On-the-job achievements as well as classroom successes are milestones in becoming a qualified Journeyman. Currently school records are submitted to the AIMS program by educators but employers are not required to participate in assessment practices. Log books, listing all the skills learned on-the-job and at technical training, have been suggested as means to record accomplishments.

The Issue

Should apprentices be issued and maintain Log Books that would list all learning and job competencies and be required to obtain appropriate sign-off by instructors and employers?

Notes from the Program Outline Working Group

The Program Outline Working Group did not comment on Log Books.

Notes from the Contractors Working Group

- ...there was unanimous agreement that BC should adopt a Log Book approach to keeping records for apprentices. The sample from Alberta was distributed and discussed as a good example.

Notes from the Sub-Committee on Entry Assessment

- There was...discussion on the use of log books as a record of performance. Some thoughts were provided on the difficulty of keeping them up-to-date and on the overall value of them to apprentices and employers. On top of the school reports, there was discussion on the need for information to be recorded on the job performances. In the end, the sub-committee recommended that apprentices be tracked on an annual employment update.

Notes from the Sub-Committee on Challenge Exams and Certification

- The sub-committee agreed that the log book process does not appear to be a manageable bureaucracy. It was mentioned that up to 50 % of apprentices have not yet attended any technical training and, therefore, no school or employer records exist for these apprentices.

Notes from the Regional Forums

Kelowna

- Consider having the employer report given just prior to the next level of technical training.

Prince George

- Using a Log Book forces industry to help evaluate the performance of apprentices. “Checking” all the items should not be mandatory.
- Apprentices should be responsible for maintaining Log Books and there should be no need for employers or government to “baby sit” this function.

Vancouver

- If Log Books are to be adopted, who is going to monitor that results are obtained?
- It was suggested that the “skeleton” of AIMS could be opened to employers for school reports.
- The inspector noted that log books are an option if the ITA has a quality management system.
- Difficulty of maintaining log books was noted.

Victoria

- The Log Book concept could be a tool in scheduling. For example, apprentices would need to show hours of work employed before scheduling the next level of training.

Notes from the Stakeholder Surveys

Q16. Apprentice training records are tracked in the Apprentice Information Management System maintained by the Industry Training Authority (ITA). Would industry also support the use of log books for this trade?

- Yes (7)
- Dependent on who provides the information for the log
- Possibly, if it is done properly
- Absolutely
- Yes, and signed off by their Journey person or their employer

Recommendation

The Steering Committee recommends that apprentices be issued a Log Book containing in-school and on-the-job competencies and apprentices be directed to obtain sign-off for each

SSA and ACE-IT

Background

The Secondary School Apprenticeship (SSA) and Accelerated Credit Enrolment in Industry Training (ACE-IT) programs provide secondary schools with financial support to deliver Level 1 apprentice technical training to high school students in collaboration with post-secondary providers. The programs also provide support for placement of program graduates in relevant employment-based training opportunities. The programs are available for the electrical trade.

The Issue

Does industry want the ITA to establish provincial standards for SSA and ACE-IT programming for the electrical trade, providing they fit within the general policy parameters already established for the programs?

Notes from the Program Outline Working Group

- The Program Outline Working Group endorsed high school apprenticeship with realistic work experience and ELTT competence taught by qualified instructors.

Notes from the Contractors Working Group

The Contractors Working Group did not comment on ACE-IT or SSA.

Notes from the Regional Forums

Kamloops

- The use of “paid employment” is a restrictive practice in the SSA program.

Prince George

- Industry is supportive of SSA and ACE-IT, although equivalency standards should be in place. CTC is popular in Prince George. It was noted that high schools must make a deal with colleges for the use of trades people for instruction.

Victoria

- Industry was supportive of SSA and ACE-IT and saw the use of Parent Advisory Committees as a good promotional option for trades training.

Notes from the Stakeholder Surveys

Q15. Have you participated in the:

Secondary School Apprenticeship (SSA) program?

- No (8)
- Yes (2)

Accelerated Credit Enrolment in Industry Training (ACE IT) program?

- No (8)

Do you have any comments about the program?

- No (2)
- SSA has been fairly successful from our point of view
- Will help

Recommendation

The Steering Committee recommends that the electrical industry is supportive of ACE-IT and SSA programs provided they follow the established provincial standards for electrical

Standardized Exams

Background

Evaluations occur throughout the career of any apprentice, from theoretical testing in the school classroom to assessment of practical skills on-the-job by a Journey person. In technical training for electricians, 70% of the marks in each Level are awarded by the instructor for accomplishments in quizzes and labs. A final theoretical exam in each Level accounts for 30% of the grade. Are the final exams given in each institution for each Level exactly the same, therefore considered completely standardized? If so, is there more than one version of each exam?

Testbanks are electronic files of many test items coded to each competency and Learning Task of the Program Outline. Templates, or “blueprints” for exams, are constructed to extract random test items that match the competencies identified in the template. For example, four standardized templates can be created to extract items coded to those competencies and tasks identified for each Level in the Program Outline. Each time an examination is created using this template, the items on the exam will be randomly the same, or different, but will be testing the same competencies and tasks each time.

The Issue

Should the same, standardized examination be used at the end of each Level for each apprentice or should a testbank of items with standardized templates be used to create the final Level examinations?

Notes from the Sub-Committee on Standardized Examinations and Certification

- Mickey Bliss noted that colleges are currently using “standardized templates” in creating their exams even though they are not drawing from the same bank of coded questions. Using the articulation process, he suggested that the current testing process has resulted in similar outcomes at the various colleges. Mickey further suggested that it was possible to establish an exam bank for all colleges and institutes to use, controlled by the colleges and BCIT and administered by the college system.
- Dan Mott noted that he wanted to make sure that apprentices are able to transfer from one college to another and be able to pass the “same” or a “similar” exam at each location.

Notes from the Program Outline Working Group

The Program Outline Working Group did not comment on standardized examinations.

Notes from the Contractors Working Group

- A discussion was held on the current technical training assessment practices. The Contractors Working Group were generally satisfied with current assessment strategies and agreed that final level examinations for Years 1 to 3 were needed but should not represent 100 % of the apprentice’s mark. Training providers should continue with quizzes and projects that currently used in their instruction. They also agreed that the use of standardized exams, still administered by the training providers, would be a useful practice. The Year 4 final examination should be expanded to include questions from

Years 1 to 3 and, given this approach, the Year 4 exam would equal the trade's qualification and the Certificate of Qualification.

Notes from the Regional Forums

Cranbrook

- Educators at College of the Rockies would support a provincial testbank.
- One industry representative wanted standardized level exams administered outside the classroom.

Kamloops

- Both apprentices and industry support standardized exams and modular curriculum across the province. Some institutions are using texts, not modules.

Vancouver

- Common core becomes more critical if standardized exams are used.

Notes from the Stakeholder Surveys

Q7. Do you have any concerns with the way in which apprentices are assessed in school or on the work site?

- a wide variety of experience should be required to be documented before completion of apprenticeship.
- No (3)
- Work site rating sheets should have tick box format as well as a comment section to encourage those completing these sheets to provide all pertinent information.
- Not in our mill. We have developed our own set of standards. We regularly have meetings with our apprentices to see where they are with these standards.
- There should be universal standards used as a measuring stick.
- Assessment at school seems to be okay, but there is no standardized method of tracking an apprentice's progress or experience while working on the job.
- May not be getting exposure to full scope of work experience on job sites.

Q8. Currently in B.C. there is no provincial test bank from which to create standard exams. Would industry support the development of a provincial exam bank to enable the same level of assessment across the province?

- The IPSE should be the only assessment examination.
- Yes (6)
- Absolutely

Recommendation

The Steering Committee recommends that industry supports a standardized examination format across the province, including a testbank of items with standardized templates.