Engineering Language Portfolio – Curriculum Development, Assessment and Pilot Summary Report

Report prepared by Vince Kelly, EMCN, 15 October 2010

Overview

This project builds on the innovative Engineering Language Portfolio developed in 2007-8 by the Edmonton Mennonite Centre for Newcomers in collaboration with the Canadian Language Benchmarks Centre under an Enhanced Language Training (ELT) grant.

Under a further 2-year ELT-sponsored project from April 2009 to October 2010, the portfolio was piloted in the classroom in the Engineering Technologist Integration Program (ETIP) at EMCN in January-April 2010. As a result of this, the portfolio was rewritten and made to be a much closer match to the needs of engineers. New support materials for teachers implementing the portfolio and for engineers using it were created.

Based on EMCN's research, a framework of 38 key engineering workplace tasks was produced, each of which is matched with custom Canadian Language Benchmark (CLB) descriptors at benchmarks 6, 7 and 8. These are the key CLB levels for internationally educated engineers seeking to get and maintain employment in Canada. This framework allows teachers and engineers to effectively reflect on current language levels and set focused language and communication learning goals using the portfolio.

The 38-task framework also formed the basis of engineering-specific curriculum materials which were developed in parallel with the portfolio pilot. These lesson materials are based around authentic engineering workplace scenarios (developed by an engineer). They provide structured practice and skill building opportunities (scaffolded to the key CLB ability levels 6, 7 and 8) in Canadian workplace language and culture as well as resources for formative and summative assessment.

Achievements

EMCN's portfolio is the first to be developed specifically for engineers. The curriculum is also innovative in being grounded in engineering workplace scenarios, closely referenced to the Canadian Language Benchmarks and in providing concrete lesson material for the integrated study of Canadian workplace culture and language in an engineering context. Little existing material was available to build on, and what did exist was generally found to be less relevant than had initially been thought. For these reasons, this project has perhaps evolved rather more from the original concepts than might normally be expected. Nonetheless, project outcomes have met and in some cases significantly exceeded the original objectives.

Materials available now include

- A completely revised Engineering Communication Language Portfolio (ECLP) focussing on the key CLB levels (6-8) for engineering employment. (The earlier portfolio had focused on CLB 5-10, but subsequent research and industry consultation confirmed that the key overall levels are 6-8. A few tasks at CLB 9 and 10, such as dealing with policy and procedure manuals have been retained in the new framework because of their work-place importance.)
- A completely rewritten facilitator's manual providing support and advice to teachers implementing the ECLP and based on what was learned in piloting the ECLP at EMCN
- New portfolio explanatory material for students
- A framework of 38 key engineering workplace communication tasks referenced to the Canadian Language Benchmarks at each of the key levels 6-8. These tasks have been verified by industry consultation and form a basis for detailed study planning in conjunction with the ECLP as well as providing a foundation for assessment and curriculum development.
- A variety of practical lesson materials based on the 38-task framework. These include authentic workplace scenarios for all 38 tasks as well as classroom-ready lesson materials for 13 units containing language and culture learning materials and assessment activities. The units are free-standing and can be used independently. This material is yet to be piloted, but each unit is likely to provide at least 4 hours of classroom activities.
- An instructor guide and index to the lesson materials
- Draft general engineering language assessment rubrics for Listening, Speaking, Reading and Writing referenced to CLB 6, 7 and 8.

In addition, detailed reports on the portfolio piloting and on the project as a whole were produced for funders and for research purposes.

Lessons learned

Much experience was gleaned in the course of this substantial 2-year project. A few points which may be of general interest are listed below.

Portfolio

- A portfolio has much to contribute to an Enhanced Language Training program, such as the Engineers and Technologists Integration Program (ETIP) at EMCN.
- There are many aspects to the portfolio, and implementing it is therefore a process which is best approached in an organized way, in stages. Careful preparation and explanation is needed to ensure a smooth and effective implementation.
- Learners and teachers may not be familiar with portfolios and how they work. Considerable time and effort may be needed to introduce and explain the portfolio, but this does pay off in terms of increased learner autonomy, motivation and development of soft skills which are useful in their future careers.
- One important aspect of the portfolio is the dossier, where learners compile a body of work which represents their achievement for their own reference or for an employer. This is perhaps the most readily understood and accepted aspect of the portfolio.
- Another important aspect of the portfolio is the principle of goal setting and progress monitoring. Based on the results of piloting, this would appear to be less well understood and accepted by learners and teachers. Nonetheless, theory indicates that effective learning is most likely to happen when the new material is only slightly above learners' current level. It is therefore important to identify areas where students are ripe for new learning as well as to convince learners and teachers of the benefits of this process.
- Graded study materials will make specific goal setting a more realistic proposition. Without such materials, there is a danger that portfolio activities will raise an expectation that focused work can be undertaken to raise language levels without this actually being realized in practice.
- There is considerable potential in making graded materials available on a self-access basis via e-learning. This would also have several follow-on benefits in terms of making materials available more widely, for example to engineers who are not able to access the ETIP program or to immigrants preparing to come to Canada.
- Raising learners' awareness of their overall CLB level and its meaning appears to be a useful exercise. Self-awareness of level is necessary to promote autonomous learning, but it is not in itself sufficient. Again, to fully benefit from the potential of this activity to motivate students, study materials which are graded in terms of CLB levels need to be used.

Curriculum

- In terms of the curriculum development, a major issue was engineering content. Most ESL or ELT teachers are not very familiar with the world of engineering. In the course of the project, it became evident that input from actual engineers was vital to make the material authentic. This was achieved firstly through using focus groups to establish the key communication tasks in the engineering workplace and subsequently by hiring an engineer to develop scenarios based on his workplace experience.
- One person is unlikely to have both engineering and curriculum development expertise. These skills need to be recruited separately and the outputs co-ordinated.
- Overall, practical lesson materials are perhaps more useful than curriculum frameworks and statements of principles and philosophy. Whereas some curriculum frameworks exist for ELT for engineers, little has been available in the form of concrete learning materials. A sound theoretical underpinning is essential for any curriculum development project, but it is important that projects do not get stuck at this stage and that practical classroom materials are made available. This is particularly important in order to provide support for teachers without extensive experience of the world of engineering.