



Case Study December 2002

Awards for Excellence in Workplace Literacy Large Business Winner, 2002 Boeing Canada Technology— Winnipeg Division

The Education and Learning case studies examine outstanding education and lifelong learning programs and initiatives. This case study addresses workplace literacy.

OVERVIEW

The Winnipeg Division of Boeing Canada Technology is the largest composite aerospace parts manufacturing facility in Canada. The plant produces composite parts for Boeing 777, 767, 757, 747, and 737 Next Generation aircraft. Approximately 1,000 highly skilled people work for Boeing Winnipeg, including 24 deaf and hard-of-hearing employees. The Boeing Winnipeg plant competes with other Boeing operations worldwide to manufacture composite parts, making an efficient production process imperative. Aerospace workers need to be highly qualified and retain certification throughout their careers to be able

to manufacture composite parts with the high degree of accuracy and efficiency required in a competitive and regulated environment. Boeing prides itself on helping all of its workers to remain certified. In fact, Boeing's Winnipeg Division recently won The Conference Board

Effective practices case study in providing training and supporting workplace literacy

Name of Program
Reading Workplace Documents for Deaf Learners

Math for Deaf Learners

Date Established
1995

Skills Developed

- Literacy and numeracy
- Respect for diversity
- Teamwork
- Communication

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of Canada's Excellence in Workplace Literacy award for a video series they developed, called *Math for Deaf Learners*. Shot entirely in American Sign Language (ASL), it was produced in partnership with the Government of Canada and the Canadian Auto Workers Union, Local 2169.

Boeing Winnipeg has been engaged in workplace education for a decade. In the early 1990s, the Winnipeg facility encouraged its workers to enhance their skills beyond the requirements of the shop floor by offering:

- General Equivalency Diploma (GED) preparation;
- instruction in English as a Second Language (ESL);
- Effective Communication training;
- high school completion courses;
- individual tutoring; and
- at-home study packages.

It also offers assistance with college courses:

- American Sign Language (ASL) training; and
- ASL training for hearing employees.

All training is offered during paid hours. Boeing Winnipeg believes that achieving higher educational goals not only has the potential to support employee career development within Boeing, but also helps to prepare employees for success in workplace-specific training, such as *Aerospace Oral Communication Levels I and II*.

NEEDS ASSESSMENT

In 1995, Boeing Winnipeg conducted an assessment of workers to find out which skill sets they needed to perform effectively within the company. This process revealed that employees needed additional coaching in reading workplace documents and in mathematics. The company responded by developing and delivering curricula in these two subjects.

Boeing Winnipeg realized that any curricula to develop employee skills would have to take into account the diverse skills, language abilities, prior learning, and cultural diversity its employees possess. The company also recognized that to be effective, workplace education needs to be as relevant as possible to employee-learners' diverse needs, including their baseline knowledge, job expectations, and individual learning styles. It acknowledged that successful workplace education offers opportunities in an unrestrictive environment that directly supports requirements for regulatory certification and cellular manufacturing.

Boeing provides a range of training reflecting the skills required for practices such as self-directed work teams, continuous improvement, and self-inspection and acceptance. Basic skills training in areas such as reading technical specifications and making calculations is relevant to the daily requirements of the plant floor. Since Boeing believes that basic skills training is the foundation for other training and career advancement opportunities, it recognizes the importance of incorporating work documents into the training modules.

By 2000, the company's investment in literacy and numeracy training had evolved into two formal courses, *Essential Skills Reading* and *Essential Skills Mathematics*. Since 1995, Boeing Winnipeg has delivered 23,000 hours of workplace essential skills and communication training to more than 1,000 employees, at a cost of approximately \$1 million.

SUPPORTING DEAF LEARNERS

Boeing Winnipeg employs 24 deaf workers, more than any other private sector company in Canada. The company realizes that supporting workplace education for deaf learners means acknowledging that they are part of a deaf community. The company's management also understands that deaf learners need to be engaged from within their own culture. Deaf workers do not see themselves as disabled. Effective workplace education pays attention to the nuances of deaf culture (for example, group consensus is crucial in the decision-making process). Boeing Winnipeg has taken these factors into account in developing curricula in *Reading Workplace Documents* and *Math*, specifically for deaf learners.

Most deaf people in North America use American Sign Language (ASL) as their first language. ASL is a manual and a visual language. In contrast with standard spoken English, it employs a different system of logic. ASL signing focuses on a main point to start with, and then proceeds to examples and explanations, finishing with a restatement of the main point. Writers and speakers of standard English tend to present a theme or main idea and then delve into layers of detail. When deaf people communicate with English speakers, they are often frustrated by details, and are anxious for the speaker to "get to the point." This, of course, has important implications for workplace education. Written material and classroom presentations cannot simply be literal translations of English language content into ASL. The content must be recast

into a logical format that meets the expectations and experience of deaf learners.

When an interpreter is employed in a classroom setting, certain rules and ethics govern his or her behaviour. For example, interpreters treat information as confidential. ASL interpreters are neutral parties, who will not advocate on behalf of, or advise, deaf learners. Instead, they strive to interpret everything they hear faithfully, which means that they render not only the main conversation, but include any aside or external sound. This gives added impetus for literacy and numeracy curricula to be adapted to the needs of deaf learners.

ASL relies heavily on “facial grammar,” rich with expression for emphasis. This visual grammar is an integral part of any conversation in ASL. In many ways, deaf people rely on facial expressions to represent the emotional content of what they are conveying, or to distinguish between different senses of the same word. Visual signals in ASL are rich in nuances, and can be a powerful vehicle in teaching and learning. Boeing Winnipeg’s *Reading Workplace Documents for Deaf Learners* and *Math for Deaf Learners* use ASL to provide high-quality instructional materials that are culture specific.

OBJECTIVES

Boeing Winnipeg’s objectives are:

- to develop training materials that support employee job functions, including reading technical specifications and making precise calculations;
- to provide literacy and numeracy training which is sensitive to the needs of all employees, including those who are deaf; and
- to improve employee success rates on annual regulatory certification, to comply with Department of Transport and Federal Aviation Authority requirements.

TARGET GROUPS

- Deaf employees
- Hearing employees

ACTIVITIES

Boeing Winnipeg has committed to making workplace education available to deaf learners in ASL, and has an inclusive approach to reaching deaf learners through the use of video.

Deaf workers at Boeing Winnipeg now have access on an equal footing with their hearing counterparts to industry standard training on reading workplace documents and math. This is particularly important in an industry where all workers must be re-certified annually, based on a combination of refresher studies, a written examination, and on-the-job skills verification.

Boeing Winnipeg has the full approval and support of the deaf community in Winnipeg for its workplace curricula for deaf learners. Instructional videos delivered in ASL, as the language of instruction, were developed by a committee made up of members of the Winnipeg deaf community, deaf Boeing employees, an instructor well versed in ASL, and a curriculum writer.

RESOURCES

- Curricula specific to the needs of workers, incorporating workplace documents, and adapting curricula for deaf learners
- Video-based training for deaf learners, using ASL

INNOVATION

Boeing Winnipeg goes the extra mile to ensure that its education programs are relevant to the diverse needs of employees and their working environment. This means incorporating workplace documents into the curriculum to enhance workers’ decision-making abilities. It also means modifying hearing curricula to train deaf employees and providing multimedia interpretations of literacy and numeracy curricula that are tailored to deaf employees. The company nurtures training, which means that employees can meet formal industry requirements and produce the kind of high performance in the workplace that contributes to maintaining the facility’s competitiveness in the global marketplace.

BARRIERS

Deaf workers concerns include:

- being regarded as disabled, when they regard themselves as belonging to a cultural group with its own valid history, customs, values, and social norms;
- being forced to rely upon written information, which does not communicate effectively to a deaf audience;
- beginning training with the expectation of being misunderstood or ignored, based on most of their experience; and
- overcoming the frustrations associated with constantly receiving information second-hand, or being the “last to know.”

The company’s challenges include:

- bringing about a cultural awareness among employees of the needs of deaf co-workers; and
- getting managers to model good communication with deaf employees and make them feel welcome in the workplace.

SOLUTIONS/KEYS TO SUCCESS

Engaging Deaf Employees

This can be accomplished by:

- using ASL as the language of teaching and learning for deaf employees;
- understanding the deaf culture and respecting the needs of deaf employees, when making decisions in their workplace education programs;
- encouraging managers to learn ASL and providing free instruction in ASL for hearing employees (on their own time); and
- involving deaf learners in the production and delivery of curricula.

Pedagogical Considerations

Teaching to the strengths of deaf learners by:

- employing diagrams and other visual aids to complement text material;
- conducting sessions interactively through the aid of an interpreter; and
- using stories and examples to illustrate and expand upon concepts.

Everyone Benefits When the Principles of Adult Education are Applied

- Include learners in planning and implementing learning activities, from the initial needs assessment through to, and including, the final evaluation
- Evaluate learning on an ongoing basis, in order to identify areas that require additional emphasis
- Recognize and build on learners’ prior knowledge, skills, and experience
- Treat learners as adults who have commitments and responsibilities beyond their jobs and the workplace
- Create a climate that encourages and supports learning
- Ensure that learning materials are culturally appropriate for, and relevant to, the needs of different learners
- Recognize and cater to different learning styles
- Encourage peer learning within a group setting

OUTCOMES

- Since 1995, Boeing Winnipeg estimates that it has delivered 23,000 hours of workplace essential skills and communication training to over 1,000 employees, at a direct cost of approximately \$1 million.
- Almost all employees who have taken the *Essential Skills Reading* course have passed their mandatory annual certification examination.
- There is a high success rate (including deaf employees) for those who have taken the *Essential Skills Mathematics* course. Positive results allow the company to continue its practice of hiring diverse cultural subgroups.

IMPACTS AND BENEFITS

Employees gain through:

- improved self-confidence and skills;
- retaining industry certification and career advancement;
- learning in their language of choice; and
- increased awareness of deaf culture in the workplace.

The company gains by:

- meeting industry regulatory requirements;
- being seen by employees to support inclusive practices within the workplace;
- creating conditions for collaboration among hearing and deaf employees;
- helping all employees to perform more effectively and building a foundation for career advancement through additional training; and
- helping hearing and deaf employees to develop more respect for each other.

The community gains by:

- having access to Boeing Winnipeg’s ASL videos that are available to companies throughout North America who employ deaf people.

USE AS A MODEL

Boeing Winnipeg’s ASL-based teaching and learning materials have been made available to other deaf groups in Winnipeg and across North America. Canadian groups using the Boeing Winnipeg mathematics curriculum include: The Deaf Centre Manitoba, Manitoba School for the Deaf, The Society for Manitobans with Disabilities, Palliser Furniture, and the Nova Scotia Community College Deaf Studies Centre.

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About the Education and Learning Case Studies

The Education and Learning case studies examine outstanding education and learning programs and initiatives. The case studies provide in-depth analysis of the methods used to develop, assess, implement, and deliver education and lifelong learning in schools, colleges, universities, workplaces, and communities. They focus on goals, activities, resource requirements, achievements and outcomes, benefits, innovations, and keys to success and challenges.

This case study addresses the theme of workplace literacy and highlights an award winner from the Awards for Excellence in Workplace Literacy, funded by the National Literacy Secretariat, Human Resources Development Canada.

Awards for Excellence in Workplace Literacy Large Business Winner, 2002: Boeing Canada Technology—Winnipeg Division
by *Kurtis Kitagawa*

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research and outline the implications for member organizations.