

LABOUR FORCE TRAINING AND THE RELIEF WORKFORCE AT THE MINISTÈRE DES TRANSPORTS DU QUÉBEC: WINNING MOVES

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SUMMARY

Labour force training and the relief workforce are major concerns for the Ministère des Transports du Québec and its partners, particularly within the context of an economy favourable to investment in public infrastructures. Organizations are seeing their fields of jurisdiction become more diversified and new technologies and regulations introduced, forcing them to continuously renew their expertise to deal with new requirements in the area of transportation.

As well, in the last few years, the labour market has been affected by the ageing of the labour force, with a rise in the demand for replacements following numerous retirements, while the skilled and qualified labour pool has progressively offered fewer choices in terms of relief workers. This labour shortage affects a number of job classes in the road, rail, maritime and air transportation sectors.

Quebec's organizations and companies are accordingly facing ever-greater challenges when it comes to hiring, developing and establishing the loyalty of a qualified workforce.

In light of this, the Ministère des Transports has over the last few years implemented various measures to ensure a relief workforce in the scientific and technical areas of transportation, improve resource management, and maintain expertise: actions to encourage youth to enter professions in the field of transportation, a mentoring program, coaching for employees starting in new positions, identification of vulnerable strategic positions, development of skill profiles, training activities, use of new forms of learning, etc.

Challenges in terms of training and the relief labour force concern all transportation organizations, whether private or public. While each may have tried to overcome these challenges in its own way and using its own methods, it appears to be increasingly necessary to aim for common strategies better tailored to the scope of the challenges facing us all.

All of the measures implemented have had a positive impact not only in terms of human resources, but also on the collaboration between the Ministère and its main partners.

1 THE TRANSPORTATION SECTOR IN QUEBEC: RECRUITMENT CHALLENGES

There has been a common thread in all human resources management issues in the last few years: Quebec is experiencing a labour shortage in a number of technical trades, particularly in the area of transportation. Following an overview of the issue, this article presents the answers provided by one of the sector's main stakeholders: the Ministère des Transports du Québec.

1.1 Labour shortage

In Quebec, the construction sector—including public works and civil engineering projects—is booming. In almost all areas, activities have significantly increased over the last few years and should remain steady for a few more years as major projects are planned, particularly in the transportation sector. The rehabilitation of infrastructures mostly built in the 1960s should also help maintain this level of activity.

Labour requirements are increasing accordingly, but the fact remains—and cannot be ignored—that recruitment issues are also on the rise, to the point where private and public companies have come to cry shortage. Although it is not easy to measure such a situation directly, indicators show that it is very real.

And so, according to a survey conducted with the companies in Quebec that hire the most engineers, namely the public sector, consulting engineering firms and the manufacturing sector, 80% of employers plan to recruit engineers in 2006 [1] (mostly consulting engineering firms), and 27% of hiring forecasts concern civil engineers in particular. Two thirds of the survey's respondents failed to find candidates matching the profiles of positions to be filled at least once in 2005.

A comparison of unemployment rates also illustrates the situation: 7.5% overall for the active population in Quebec compared to 3.6% for engineers, and 2.5% for civil and construction engineers [2].

These data regard engineers, but the labour shortage regards all transportation sectors—road, rail, maritime and air—and all types of occupations—foremen, workers, truckers, transportation logistics experts, engineers, professionals and technicians.



Figure 1 – A booming civil engineering sector

1.2 A lack of young graduates

If companies in the transportation sector are having problems hiring new employees, it is mostly because the skilled and qualified labour pool is not being renewed fast enough to meet employers' needs. Indeed, graduates in scientific and technical fields—including transportation—are too few. To explain this situation, we have to take a look at the career choices of not only teenagers, but also children.

According to research, kids' interest in these fields of study is limited [3], although the situation is improving. Despite efforts made to develop the scientific and technical culture within the population, Quebec seems to be showing a deficit compared to the rest of Canada in terms of the place these disciplines have in the latest elementary and secondary school curricula.

The TEIMS surveys also indicate that kids in Quebec are less interested, compared to the rest of the world, in studying science and pursuing a career requiring a scientific background, despite good grades in these subjects [4 and 5]. However, the proportion of students who like studying science increased considerably between 1995 and 2003.

This encouraging sign was corroborated by a recent report indicating that, between 2001 and 2005, in Quebec, enrolments in undergraduate engineering programs rose by 10% [6]. Civil engineering, which best leads to jobs in transportation, saw the greatest increase in enrolments in all of Canada, i.e., a 56% increase between 2001 and 2005, most likely the result of the strength of the public works sector.

However, it must be noted that female enrolments continue to fall, namely by 4% in the same period. In 2005, women still represented only 16% of full-time enrolments in undergraduate engineering programs in Quebec [6].

1.3 Increased mobility

Within this context, human resources management problems are not limited to recruitment: companies must also keep the skilled employees who meet their needs.

Because there are so many job offers, employees tend to change jobs more often in the course of their careers. They want to diversify their skills and experience. From the employer's viewpoint, in a tense situation such as this, mobility can mean loss of expertise. This problem is more pronounced in regions far from urban centres.

Another phenomenon further exacerbates this situation. Indeed, in Quebec, as in many western countries, the labour market is marked by ageing employees and an increasing number of retirements.

Lastly, it must be pointed out that skill maintenance is not limited to keeping employees. Indeed, with changing user needs, technologies and processes, organizations must continually renew their expertise. It thus becomes a skill management issue.

2 HUMAN RESOURCES MANAGEMENT AT THE MINISTÈRE DES TRANSPORTS DU QUÉBEC: A COMPREHENSIVE APPROACH

Companies are faced with increasingly difficult challenges in terms of recruiting and ensuring the loyalty of a qualified workforce. As the province's largest employer in the area of transportation and manager of an extensive road network, the Ministère des Transports du Québec is directly concerned.

In 2006 it had 7,250 permanent and casual employees, including 500 engineers. The average age of employees is 48. In the last two years, the Ministère hired an average of 400 to 500 employees each year to fill permanent and casual positions.

Its strategic plan acknowledges the significance of the issue and includes the goal to "Improve human resources management, maintain expertise and ensure the relief workforce through the development of a people management framework that provides for workforce management planning" [translation] [7].

The Ministère des Transports du Québec accordingly implemented a number of measures based on two central themes: fostering a relief workforce in the area of transportation, and managing the organization's employees and ensuring their loyalty.

2.1 Fostering the relief workforce in the area of transportation

Measures to foster the relief workforce in the area of transportation are directly aimed at kids of various ages: college or university students who have already chosen a specific course of study as well as high school and even elementary school students. The aim in promoting transportation is to attract young people to scientific and technical disciplines.

The Ministère's goal is to raise kids' awareness of the sector, make the associated professions and research activities more attractive to them, and encourage them to undertake and continue in these types of studies. The measures implemented vary: openings for students in summer internships (the Ministère receives on average 500 students every year), grants for university research programs that contribute to

training young researchers, workshops in schools, participation in career days, contest organization support, etc.

The Ministère has joined forces with a number of organizations working to promote science and technology with Quebec's youth to carry out several such activities [8]. Here are a few examples.

2.1.1 *Les innovateurs à l'école et à la bibliothèque*

The Ministère joined the Société pour la promotion de la science et de la technologie's program *Les innovateurs à l'école et à la bibliothèque* [innovators at school and at the library] [9], allowing the Ministère's experts to become scientific facilitators for workshops presented in primary and secondary school classes.

For three years now, experts have presented a scientific outreach workshop on the interaction between transportation and climate change to grade 5 and 6 students in the Montréal region. To this day, 16 separate classes in 8 different schools have taken part in the program.

The goal of this activity, which takes about an hour, is to raise kids' awareness of the significance of climate change for the planet and inform them of the simple steps they can take in their daily commute to mitigate the impact of transportation through a presentation and fun and interactive games. For innovators, this is a fulfilling activity and a unique opportunity to share their passion for the work and climate change with kids, demystify this field and—why not?—give some of them a taste for science.

Because of its innovative nature and the way it educates kids, this workshop received the Association québécoise du transport et des routes's Environment award, education and awareness category, in the spring of 2006.

The workshops offered by the Société de la promotion de la science et de la technologie are published every year in the form of index cards and sent as part of a guide to all the schools within the various school boards.

2.1.2 *The "Future ingénieure" program*

Since 2006, the Ministère has been associated with the "Future ingénieure" [future female engineer] program, sponsored by the École polytechnique de Montréal's Marianne-Mareschal Chair [10]. In the region of Québec, the Boîte à sciences, a scientific outreach youth organization, is associated with the Marianne-Mareschal Chair for this activity.

This program offers college-level students the chance to discover various jobs in the engineering field with a view to helping them make a career choice and familiarize themselves with the profession. At the Ministère, the activity takes place over the course of a day and includes testimonials from female engineers regarding their education, their professional and personal evolution, their everyday realities at work, and balancing work and family. The day ends with technical visits, allowing students to experience concrete aspects associated with the engineering profession—in 2007, this entailed a visit to the Laboratoire des chaussées.

The great thing about the program is that it can be organized across the province, based on matching opportunities between students and engineering employees.

2.1.3 Contest support

For three years now the Ministère has been taking part in the *Bell Science Fair*, organized by the CDLS-CLS (recreational science development council and network of regional recreational science councils) network, by awarding prizes in the 12 regional finals as well as at the Quebec finals, the *Super Expo-sciences Bell*. The Science Fairs [11] encourage young people under 21 to submit a project with scientific content or using a scientific process.

In creating the Transportation category, the Ministère has sparked the interest of young people who, year after year, submit highly relevant projects, confirming their concern with respect to transportation. Their participation also provides an insight of the way young people see fields associated with transportation. Most of the projects in the Transportation category regard the environment and sustainable development: energy sources other than fuel, recycling, ways of reducing fuel consumption, etc.



Source : Ministère des Transports du Québec

Figure 2 – Minister for Transport Julie Boulet awarding the prize from the Ministère des Transports to Raphaël Roy at Super Expo-sciences Bell 2005

Moreover, for many years now the Ministère has been granting scholarships through *Chapeau, les filles!* and *Excelle Science*, contests organized by the Ministère de l'Éducation, du Loisir et du Sport. The aim of these contests is to encourage women undertaking studies leading to non-traditional jobs. The Ministère is also represented on the judges panels for these contests, giving it the opportunity to find out what future graduates are interested in, for example the environment, as well as the social and international aspects of their future professions. We can say that young girls have a realistic view of the professions they choose.

The Ministère also provides financial support for the organization of events and competitions hosted by colleges and universities in Quebec. This is the case, in particular, of the contest "Le Génie, c'est génial!" organized by the Québec regional section of the Ordre des ingénieurs du Québec, and the Pontpop competition, hosted by the École de technologie supérieure de Montréal, where teams have to build bridges using sticks of wood.

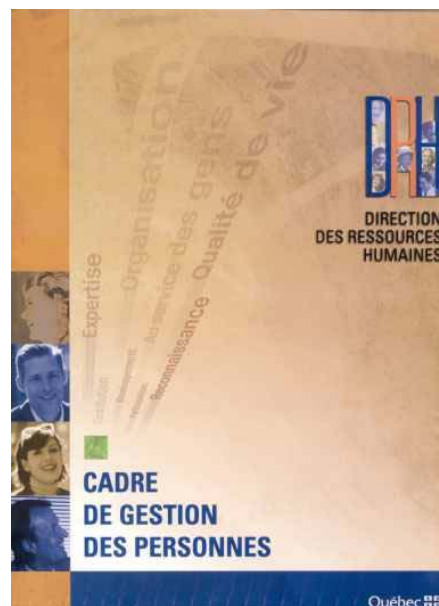
Finally, this year for the first time, the Ministère sponsored the Jeux de Génie du Québec [Quebec engineering games], where faculty of science and engineering teams go head to head in academic and sports competitions.

The Ministère has undertaken such attraction activities regularly for a number of years now, and the results are encouraging. More and more kids are made aware of the interest of science in general and transportation in particular, and of the diversity of related jobs.

2.2 Managing employees and ensuring their loyalty

In 2002 the Ministère undertook a progressive and ongoing process to improve people management in the form of a set of integrated and consistent actions: the people management framework.

The components of the people management framework cover aspects as widely varied as the identification of issues over the next few years, the management of coaching staff, quality of working life, management of the contribution, recognition, skill management, labour force management planning, work organization, work/family balance and work reintegration. The framework comes with a “tool box” comprising 47 separate products and services at the disposal of managers and employees: guides, awareness workshops, training, etc.



Source : Ministère des Transports du Québec

Figure 3 – The people management framework adopted by the Ministère des Transports du Québec

Why was this framework adopted? First, because the Ministère takes the welfare of its managers and employees to heart and fully intends to devote all of the energy and resources necessary to sustain the latter. Second, because it wants to provide them with the support they need to take responsibility, enhance their contribution and foster the use of their expertise to successfully carry out the Ministère’s mission to provide products and services that meet the public’s expectations. Lastly, to ensure employees’ loyalty by

establishing the conditions they need to choose to stay with the organization and pursue a career there.

Particular attention was paid to young people's needs: focus groups composed exclusively of young employees were consulted and called on in the development of the people management framework. The creation of the Réseau jeunesse [youth network] in 2002 also testifies to the Ministère's desire to integrate employees under the age of 35 within the organization and foster constructive dialogue regarding their day-to-day concerns to ensure good quality of working life.

As a result of its composition—i.e., twenty or so young people in all job categories and from all branches—the Réseau allows for relevant and fresh dialogue, causing the Ministère to consult it on a variety of issues and/or projects.

Of all the people management framework measures implemented, some have had a greater impact on ensuring employees' loyalty: management of the contribution and the recognition of people, career management, and skill management.

2.2.1 Management of the contribution and recognition of people

New employees will spend their entire career at the Ministère if they hold positions and carry out clear and interesting mandates with opportunities for accomplishment and to surpass themselves; if the results are useful; if they are heard, get involved and have an influence; if they have some latitude; and if they receive private and public recognition for their contribution and efforts.

To this end, the Ministère has been providing training to close to 300 managers, team leaders and coordinators since 2005 on people skills, contribution management and the recognition of people. The latter have the power to establish and maintain with their employees relationships conducive to the fulfilment of the abovementioned needs, particularly as regards the identification, monitoring, assessment and recognition of mandates completed and results achieved. In fact, in 2005-2006, more than 2,200 employees met with their managers specifically with a view to assessing and recognizing their contribution. As well, 1,300 employees received a written statement of their contribution.

In addition to their functional and relational benefits, these mechanisms to manage the contribution and recognition of employees provide data that is crucial to the effective management of employees' careers and skills development. Indeed, on this occasion employees can not only discuss with their managers the skills used in the last year but also agree on the work and mandates they will be carrying out over the coming year(s), based on current needs and future aspirations. Managers and employees can subsequently implement the necessary actions to ensure that employees develop the required skills.

2.2.2 Career management

In terms of career management, 411 employees of the Ministère have, since 2002, taken part in a variety of career management workshops aimed at young employees as well as professionals and/or engineers aspiring to become managers. These workshops gave them the opportunity to take stock of their career situation, see where it was taking them and accordingly develop and action plan to meet their needs and achieve their goals. In addition, starting in 2007, first-level managers can take part in new career workshops

intended to establish their interest in becoming strategic managers and develop an action plan to this end.

2.2.3 Skill management

The Ministère devotes a lot of energy and resources to the management of its managers' and employees' skills, both at the departmental level and within each of its administrative units. The measures used allow for the development, exchange and transfer of skills, collectively and individually. They include the establishment of skill profiles, a coaching and mentoring program as well as professional development activities, including e-learning.

Accordingly, the Ministère undertook in the last two years the development of 21 skill profiles for some 4,500 employees. Eleven of these profiles are already at the disposal of managers for the selection and integration of their employees and, most of all, to manage their skills. In addition, 219 jobs have been defined as "strategic," i.e., at the heart of its product and service delivery to the citizens of Quebec. Relief and development plans are being prepared to make sure that the Ministère always disposes of competent incumbents and relief employees for each of these positions.

Furthermore, the integration of a high number of new employees requires a significant investment in terms of job integration and training for the position to ensure appropriate technical and/or strategic skills.

A large number of new employees have benefited from spontaneous coaching and mentoring by their colleagues [12]. However, in order to provide these coaches and mentors the opportunity to play this role and structure the way they carry out the associated responsibilities, the Ministère has implemented a program from which 67 people have benefited to date. Highly appreciated, the mentoring and coaching program will continue over the next year.

2.2.4 Professional development

Professional development activities regarding the Ministère's areas of expertise are internally organized on a regular basis. To meet its growing needs, the Ministère is also increasingly joining forces with other organizations.

In this way, over the last few years, the Association québécoise du transport et des routes has developed with the Ministère courses aimed at staff working for the Ministère, municipalities and in the private sector. These courses cover a wide range of expertise, from geometry to winter viability and road safety. An interactive pedagogical approach is fostered.

The Ministère also collaborates with the Centre d'expertise et de recherche en infrastructures urbaines, which offers a training program focused on roadways, engineering structures and underground infrastructures. Some universities furthermore organize training developed by experts at the Ministère, mainly in the area of engineering structures.

If we take a look at all of the development activities in which its employees have taken part [13], the data clearly show the scope of the Ministère's commitment: 15,200 days of training for 7,250 employees, i.e., an average of 2.1 days of training per employee. The investment devoted to these activities was 4.5 million dollars in 2005-2006, close to 1.8% of the total payroll (see Table 1).

Table 1 – Development activities at the Ministère des Transports du Québec by job category

Job category	Workforce	Person-days of development
Engineers	507	1,490
Public works technicians	976	2,523
Workers	2,942	4,315
Managerial staff	362	1,508
Professionals	813	1,727
Administrative and technical staff	1,643	3,632
Total	7,243	15,195

More than half of the total number of days of training provided were given by internal resources. Training is aimed at all job classes, from managerial staff to workers. They cover a number of areas, including the technical, administrative and managerial fields (Figure 4).

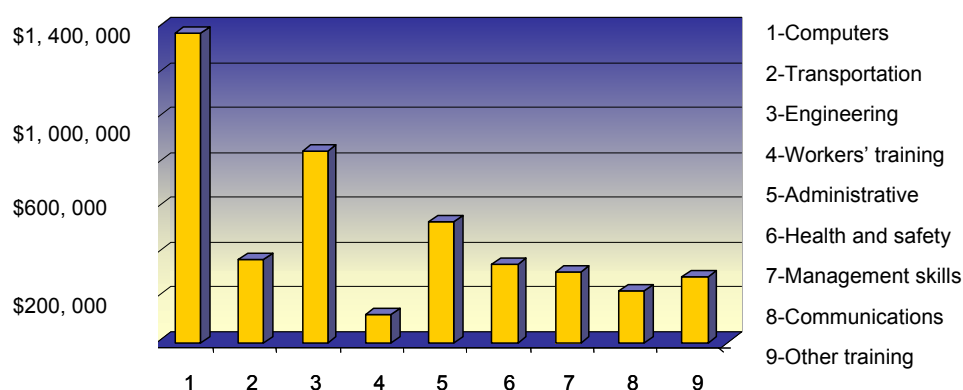
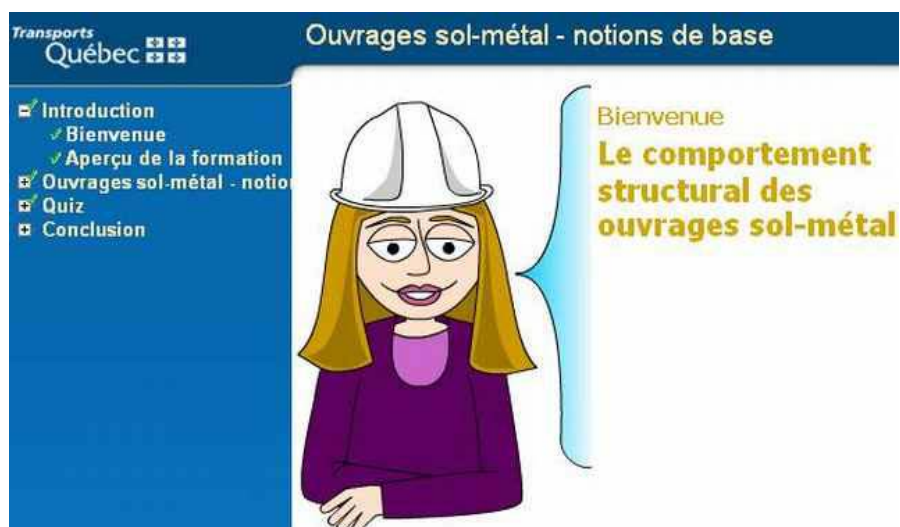


Figure 4 – Investments by the Ministère des Transports du Québec in development activities by theme

Activities related to computers mostly regard departmental systems and are intended for all employees. Technical training is the second largest in terms of investment. The latter is aimed more at engineers and public works technicians and covers a wide variety of fields: the design, construction and repair of structures, outdoor advertising, roundabouts, road project planning, ethics and the evaluation of proposals, management of the impact of roadwork on vehicular traffic, signage, etc.

2.2.5 E-learning

Since 1985, the Ministère has worked towards implementing a departmental e-learning solution. This new teaching method—very handy for an organization with a wide pool of employees spread out over a vast territory—has allowed the Ministère to increase its training capacity and reduce travel costs, without affecting quality of service.



Source : Ministère des Transports du Québec

Figure 5 – Home page of online self-training broadcast in the spring of 2006

E-learning uses a variety of approaches, making it possible to choose the most appropriate teaching method while optimizing budgets and resources.

Between November 2005 and September 2006, the Ministère broadcasted 11 self-training activities online, thus making available to employees more than 21 hours of multimedia learning content associated with several computer applications and integrated resource management administrative systems, data security, the structural behaviour of culverts, etc.

Broadcasting of these activities allowed some 2,500 employees to complete an impressive total of 14,400 hours of self-training online, equivalent to approximately 2,000 person-days of training. The results thus obtained are conclusive, in terms of both the effectiveness of the broadcast (high number of individuals trained quickly and without need of travel) and trainee satisfaction.

The success of these experiences allows the Ministère to foresee significant benefits in the long term for itself and its employees.

In collaboration with the main branches broadcasting training to Ministère employees, several potential professional development projects online and in virtual classrooms [14] have been targeted over the next few years. For example, training on road conditions, signage for roadwork, assessing the load capacity of steel/wood bridges, structural inspections.

3 CONCLUSION

In Quebec, challenges associated with training and the relief workforce concern all companies in the transportation field, whether in the private or public sector. As a major employer, the Ministère des Transports du Québec is directly concerned.

Building on its *2005-2008 Strategic Plan*, the Ministère has accordingly implemented a number of measures to ensure the relief workforce as well as manage its employees and ensure their loyalty. Its people management framework covers aspects as diverse as management of the contribution and the recognition of individuals, career management and skill management.

Aware of the importance of establishing common strategies commensurate with the scope of challenges, the Ministère also works with its main partners in the area of transportation in Quebec, representing not only municipalities and the education sector but construction companies and consulting engineering firms as well.

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8. In particular, the Ministère de l'Éducation, du Loisir et du Sport, the Ministère du Développement économique, de l'Innovation et de l'Exportation, the Société pour la promotion de la science et de la technologie, the Conseil de développement du loisir scientifique, the Marianne Mareschal Chair, the Quebec Chair for Women in Science and Engineering, universities, colleges, etc.
9. Innovateurs à l'école et à la bibliothèque program: www.spst.org/innovateurs.
10. Marianne-Mareschal Chair: www.chairemm.polymtl.ca/.
11. Science Fairs: www.exposciencesbell.qc.ca/en/100-index.htm.
12. Mentoring is defined as an interactive learning relationship between a person (the mentor) sharing his or her knowledge, experience and ideas with another, less experienced person (the mentoree) willing to benefit from this exchange. Coaching is a development procedure in which a person looking to improve the skills necessary to the position he or she holds agrees to receive the help of another person who already has these skills.
13. Development activities include not only professional development courses but also conferences, seminars, workshops, discussion groups, and mentoring/coaching activities.
14. There is a virtual classroom when participants simultaneously connect to a training session. They can communicate in real time either through webconference, videoconference, or chatting. Live online training also makes it possible to share applications and interact with the latter from the moment the training instructor provides access to the document shared.