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Chair

Mr. Ed Komarnicki

Standing Committee on Human Resources, Skills and Social Development and the Status of Persons with Disabilities

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● (1545)

[*English*]

The Chair (Mr. Ed Komarnicki (Souris—Moose Mountain, CPC)): The meeting will come to order. We're now in public.

I'd like to thank you, Ms. Blain, for indulging us with the extra time we needed to do some committee business. We appreciate your doing that for us.

The practice is that you have five to seven minutes initially to present, and then you will have questions from each of the parties with respect to your presentation.

I understand you're the vice-president of research grants and scholarships with the Natural Sciences and Engineering Research Council of Canada. We welcome you here today.

Feel free to start your presentation.

Ms. Isabelle Blain (Vice-President, Research Grants and Scholarships Directorate, Natural Sciences and Engineering Research Council of Canada): Thank you very much, Mr. Chair.

Thank you for inviting me and NSERC, the Natural Sciences and Engineering Research Council of Canada, to talk about our efforts to fill the skills gap. We certainly welcome the opportunity to outline our progress in supplying highly qualified personnel to address labour shortages in high-demand occupations.

Developing Canadian talent in natural sciences and engineering, NSE, is a key part of our mandate. NSERC has an impressive track record in making Canada a country of discoverers and innovators. Over the past decade, there has been an 88% increase in the number of students and fellows receiving support, either directly or indirectly, from NSERC.

[*Translation*]

NSERC's $1-billion investment enables 41,000 students and experienced researchers at universities and colleges across the country to study promising ideas and innovations that will give Canada a competitive edge in the 21st century.

While these figures may seem encouraging, the fact remains that Canada does not train enough scientists or engineers. Whether at the undergraduate or Ph.D. level, Canada ranks among the lowest in the world when it comes to producing university graduates in natural sciences and engineering.

[*English*]

Most worrisome, we are seeing a decline in enrolment rates at the undergraduate and master's levels in our fields compared with a decade ago. Increasingly, Canada is relying on foreign graduate students to carry out the research that happens in our universities, research that will result in discovery and innovation.

[*Translation*]

We cannot, however, rely on the contribution of foreign students and researchers to bring Canada up in the rankings, not now or in the future. Why, then, do we hear about shortfalls when university enrolment is hitting an all-time high? The challenge nowadays is encouraging young people, especially more young women, to pursue studies and a career in natural sciences and engineering.

[*English*]

Even though boys and girls are about equally represented in K-12, at university there's a major gender divide in natural sciences and engineering. Anything we can do to steer more women into these fields will go a long way in helping to fill the gaps in high-value, high-paying occupations.

NSERC understands this and is taking action. For example, we have increased the focus of our PromoScience program on under-represented groups so that they can continue studying in math, science, and technology throughout secondary school to broaden their career opportunities.

[*Translation*]

NSERC also strengthened its policies to help students and researchers achieve a work-life balance. These policies help women in science and engineering realize their full potential.

NSERC also monitors the peer review process to ensure that decision making is not gender-biased.

In addition to highlighting the importance of attracting more students to the natural sciences and engineering field, NSERC is developing new methods to help those seeking a career in the field hone their skills and prepare for the workforce.

[*English*]

We were told during consultations across Canada that while our graduates have outstanding knowledge and abilities, they often lack the soft or professional skills, so we now provide greater opportunities to students to work in interdisciplinary teams and hone their communications, project management, and business skills through on-the-job training.

For instance, budget 2009 and budget 2010 provided additional funding to the industrial research and development internship program, the IRDI program. It funds internships that match students and post-doctoral fellows with industry needs.

We've also launched CREATE, the collaborative research and training experience program. These grants enable qualified trainees to acquire professional skills. In doing so, they facilitate the transition of new researchers from trainees to productive employees in the workforce.

● (1550)

[*Translation*]

Of course, I am not claiming that these initiatives alone are going to solve the problem. There is still a long way to go before Canada catches up to the 20 or so higher-ranking countries that produce more science and engineering graduates, proportionally speaking.

[*English*]

Our progress over the past decade should give us all hope that Canada can and will produce the skilled workforce it needs to keep our country at the cutting edge of innovation.

Thank you. I'm looking forward to questions from the committee.

The Chair: All right.

Go ahead, Ms. Crowder.

Ms. Jean Crowder (Nanaimo—Cowichan, NDP): Thank you, Chair, and thank you, Ms. Blain, for coming before the committee.

There are a couple of points in your presentation that I think are very interesting. First, you said that in some of these fields, enrolment rates are declining. Do you have any sense of why that is?

Ms. Isabelle Blain: That's an easy question for a difficult answer. First of all, there's a proportion, so it can be that other fields are growing faster than natural science and engineering. The numbers are going up, but proportional to the total number of students enrolled, there are fewer who choose biology, chemistry, physics, and engineering relative to social sciences, humanities, and health. We don't normally use the term “hard sciences”, because that's not the reality, but there are some kids who, through high school, opt out of mathematics, chemistry, and physics. Therefore, at that early age, they limit their options. When they get to university, they don't have the prerequisites to go into the natural sciences and engineering.

Ms. Jean Crowder: That leads me to my second question. A number of years ago, I did a project on barriers to getting students involved in high-tech careers. One of the things we discovered was that colleges and universities may have been doing some recruiting work at the high school level, but where the barriers actually started was in the K-12 system. Are you doing work in the K-12 system?

What we found is that if they don't have the foundational skills in the sciences and maths in the K-8 system, they are not going to make those choices in high school. Are you doing work at the levels leading up to grade 8?

Ms. Isabelle Blain: We do that through organizations we provide grants to. Our program called PromoScience supports a number of organizations across the country that reach out to 10- or 12-year-old boys and girls. The program seeks to inspire and maintain their interest.

I know that Bonnie Schmidt was here. She is the president and founder of one of those organizations. She is probably a lot more qualified than I am to speak to that issue. Yes, we have a program that aims to support those who reach out to kids, whether it's NSERC itself or other organizations that are expert in reaching out to K-12 students.

Ms. Jean Crowder: Can we touch on women's recruitment? It may be that women get their degrees, but the retention rate of women in some of these fields is not particularly spectacular.

I'm going to use lawyers as an example. Many women get off the partner track. They opt not to stay in. What is your experience with retention of women? They are already seriously under-represented. What is your experience of retention of women once they get into the field?

● (1555)

Ms. Isabelle Blain: There is what is referred to as the “leaky pipeline”. There are more women getting bachelor's degrees than there are getting master's degrees. We then lose some at the transition from master's to doctorate. We lose some more from doctorate to post-doctorate, and more still from post-doctorate to university professors. The ratio of women in the natural sciences and engineering faculties is about 22% women to men.

Ms. Jean Crowder: Sorry, did you say that 22% of the faculty are women or that the ratio is 22 to 1?

Ms. Isabelle Blain: The percentage is about 22%. It has been pretty stable—18%, 20%, 22% for almost 20 years. It has moved up, but very slowly.

Ms. Jean Crowder: It sounds like this place.

Ms. Isabelle Blain: Yes.

Not having many role models at the faculty level is one of the factors that is not necessarily encouraging more young women to pursue careers later on. Yes, we have a leaky pipeline. We lose them from grade 12 to university, and then at all of the points throughout.

Ms. Jean Crowder: Have I still got time?

The Chair: You're at 4:55.

Ms. Jean Crowder: Okay.

Briefly, is there any additional funding to encourage women to stay through the graduate work, funding that is specifically targeted for women?

Ms. Isabelle Blain: At NSERC, no, there isn't. We have very small programs. We have a program that funds five women. It's called the chairs for women in science and engineering. We have one of those chairs in each region: Atlantic, Quebec, Ontario, the Prairies, and Vancouver.

Their role is very much outreach. It's also doing research into how the situation can be turned around, understanding what the issues are for women in science and engineering, and also acting as role models and as multipliers of role models throughout. It's a very small program relative to the $1 billion that NSERC has.

We try to do more through policy because we're not the employers of university professors. We have to work in partnership with universities so that they have policies in place that are more encouraging to the recruitment and retention of women.

The Chair: Thank you very much for that.

We'll move to Mr. Daniel.

Mr. Joe Daniel (Don Valley East, CPC): Thank you, Chair, and thank you, witness, for being here.

I'm looking at your slides here. I have a couple of questions to start off with from there. They're not numbered, but it's on page three, the top one. It says that 60% of the NSERC-funded students and fellows work in an R and D environment and are already earning more than $70,000.

Part of the study that we're looking at is how industry and the skill gaps are actually taking place. How many of these actually end up in industries somehow, or supporting industry and our economy?

Ms. Isabelle Blain: I don't have that number off the top of my head, but it's more than half. Fewer than half of the Ph.D. graduates go on to careers in an academic setting. That leaves all of the other sectors with more than half of the graduates.

Mr. Joe Daniel: They're going to industry.

Ms. Isabelle Blain: They're going to either industry or NGOs. It could be provincial or public service, but—

Mr. Joe Daniel: There's no breakdown of the industry portion?

Ms. Isabelle Blain: I don't know that offhand.

Mr. Joe Daniel: Okay.

Clearly the feed into some of these higher-level degrees is determined by the number of people who go into the first degree production. We're lagging way behind some of our competitors, competitors being places like Taiwan, which has way more people going into their first degrees for a population of about the same size as ours, approximately.

Do you have any comments on why that is?

Ms. Isabelle Blain: This is not necessarily a new issue. It's part of a trend. The worry is that we're not making much progress. Why is that? The role of scientists or engineers is not well understood in K-12, so they don't necessarily see that as a career. It starts before they get to university, because by the time they get to grade 12, they already know their choices.

● (1600)

Mr. Joe Daniel: Would the cost of getting into a first degree be a factor in deterring people from getting into it, in your opinion?

Ms. Isabelle Blain: The cost in science and engineering is the same as the cost in social sciences and humanities. The numbers are growing in other sectors within academia.

Mr. Joe Daniel: I was looking at it on an international basis. Is it cheaper to do a degree in Taiwan than it is in Toronto?

Ms. Isabelle Blain: There are some countries where there are no tuition fees. Europe has a tradition of not having any tuition fees. It's free for anyone who wants to go to university. Is tuition a factor? It might be. It's certainly not the only factor.

Mr. Joe Daniel: Have you done any work to find out whether the cost of an initial degree is the same, more expensive, or less expensive compared to the other countries?

Ms. Isabelle Blain: We have not looked at that element.

Mr. Joe Daniel: Given the specialized skills required in your organization, can you provide insight into what specific skills are most in demand?

Ms. Isabelle Blain: Besides their specific knowledge and expertise, they need communications skills, project management skills, an ability to work in interdisciplinary teams, an ability to work across boundaries and sectors, and business skills. They need the ability to prepare business plans. If you have young scientists who are ready to go and start their own businesses, they need to write business plans. They need to take care of the finances of their companies.

They need all of those skills that complement their scientific expertise and engineering knowledge.

Mr. Joe Daniel: Do you have any idea of how many actually become entrepreneurial and start their own businesses when they come out of these programs?

Ms. Isabelle Blain: There are certainly some. I'm not sure how many or what proportion do. It's hard to pin down. It's very difficult to get those accurate numbers.

Mr. Joe Daniel: Can you also highlight any specific skills within your fields that are currently experiencing shortages or are expected to experience shortages in the near future?

Ms. Isabelle Blain: Enrolment is decreasing in computer science. It's not increasing in engineering. Those are highly valued skills.

I'm a biology graduate, and when I was doing my bachelor's degree, one of my teachers told the class that science leads to anything. Sometimes you have to venture into different fields. We certainly expect NSERC staff to have a scientific background so that they can interact with the community.

Education in science and engineering leads.... Obviously, we would like them to pursue science and engineering careers, but they are not limited to the scientific and technical fields as careers.

Mr. Joe Daniel: Yes; it's a pretty broad description when you say "science and engineering".

Are there any specific disciplines? We hear of many jobs available in the oil sands, for example, that can't be filled by people with degrees or higher education. Are there some specific disciplines you're working with that you feel are in short supply?

Ms. Isabelle Blain: We try to increase the capacity in all of the fields, because in one way or another, all the natural sciences and engineering can lead to high-value positions and innovation for the country. The oil fields would tend to be looking for engineers, people with chemistry backgrounds, and even environmental scientists.

Mr. Joe Daniel: They need geologists.

Ms. Isabelle Blain: They need geologists, exactly.

Mr. Joe Daniel: IT is big.

Ms. Isabelle Blain: They need biologists, as well. Really, they need a mix of different skills.

The Chair: You're a bit over time.

Ms. Hughes, go ahead.

Mrs. Carol Hughes (Algoma—Manitoulin—Kapuskasing, NDP): Thank you very much. I have just a few questions.

In your slides you show that Canada ranks poorly in first university degree production and at the doctoral and master's levels. I'm just wondering if you have looked across the board to see why these other countries are more successful than we seem to be here in Canada.

● (1605)

Ms. Isabelle Blain: Formally we have not, but informally, from our discussions with colleagues in Japan and Taiwan and other countries, part of the answer is K-12 education and making sure that any graduate with a high school degree has the option of going into science and engineering and doesn't opt out by dropping math and chemistry, for instance.

Mrs. Carol Hughes: You say it's K-12. What is it specifically in K-12 that's missing?

Ms. Isabelle Blain: I'm not an expert on K-12.

Mrs. Carol Hughes: Is it the educational portion, or is it the promotion? I'm just trying to get a sense of it here.

Ms. Isabelle Blain: We did a study a number of years ago. The pipeline was small, so we wondered how we could increase the pipeline going from high school to universities.

One of the elements, one of the facts we found at that point, was the number of science teachers in high schools who themselves did not have science backgrounds. It's difficult for science teachers to teach their subject convincingly if they themselves didn't really learn it and don't have expertise in their own backgrounds. That's one element where Canada is different from other countries.

It was also the matter of how the careers of scientists are valued or not valued. What does an engineer do? What does a scientist do on a day-to-day basis? It is not well known, so the role of the guidance counsellors is important as well.

Mrs. Carol Hughes: I just want to go back a bit, because you also mentioned whether it is valued or not valued. I'm just wondering, when you talk about value, if it is because there is a better-paying job elsewhere than there is here.

Ms. Isabelle Blain: That could be part of it, but this is really not my expertise. I think I'd be making assumptions. Others might have better answers than I have on this specific element.

[*Translation*]

Mrs. Carol Hughes: I want to add that you receive federal funding. What percentage of your budget does that represent? Is it 100% or do you have partners?

Also, were you told that you would be receiving less funding this year?

Mrs. Isabelle Blain: NSERC is a federal agency. Therefore, all our funding comes from the federal government. We will find out tomorrow, when the budget is presented, how much we will have. Like the other agencies and departments, we had to provide possible budget reduction plans. We fulfilled our obligation as asked. We'll have the answer tomorrow. That is when we will know whether our budget will be cut.

Mrs. Carol Hughes: We'll find out tomorrow.

Mrs. Isabelle Blain: We'll find out tomorrow.

[*English*]

Mrs. Carol Hughes: Do I still have time?

The Chair: You have 45 seconds.

Mrs. Carol Hughes: When you talk about women and how you're having trouble attracting women, is there a funding issue there for them, do you think?

Ms. Isabelle Blain: No, I don't think it's a funding issue. I think it's more how women perceive science and engineering and the fact that there are few role models.

Natural sciences and engineering make up a very broad field. There is a high proportion of women in biology—about 60% of the people in that field are women—but when you get to computer science or engineering, the numbers go down to less than 30%, and sometimes 20%, so even within our fields, it's a very varied situation. Overall, the proportion of women is very low in science and engineering.

The Chair: We'll move on to Ms. Leitch.

Ms. Kellie Leitch (Simcoe—Grey, CPC): Thank you very much.

Thank you very much for coming today. I appreciate your comments with regard to engineering-focused employment. I'm an orthopedic surgeon, so I'm a bit of a cross between an engineer and a carpenter—

Voices: Oh, oh!

Ms. Kellie Leitch: —depending upon the day and the hour.

One of the things that comes up again and again is this real challenge with skills shortages across the country, and our need, going forward, to make sure that all of the job opportunities being made available are being filled by Canadians. We want to make sure that we're actually educating young Canadians and that whether they live in northern Canada, whether they are aboriginal Canadians, or whether they are new immigrants, they are receiving the right skill set.

What do you think are the three key factors that we should be focusing on in that younger age group—I won't define the term "younger" for you, because you've spent a lot of time in this field—to encourage young people to enter into those roles that deal with the skills shortages we are seeing in the engineering sciences? Also, are they a little bit different for the different fields that you work with? That would be one question.

● (1610)

Ms. Isabelle Blain: I'm not going to touch upon more about K-12 —

Ms. Kellie Leitch: That's fine.

Ms. Isabelle Blain: —because our agency deals with colleges and universities.

Ms. Kellie Leitch: That's fine. I know that you deal with undergrad and post-graduate education.

Ms. Isabelle Blain: There's a retention issue. Many jobs now, I think, require more advanced degrees than they did a number of years ago. It's making sure that we retain those who choose to go into physics or engineering 101 and that they continue to 201, 301, and go on to complete their degrees. It's one element. It's more a teaching mission of the university.

What NSERC can do is provide research scholarships to the bachelor's degrees so that they get a taste of what research is about. The undergraduate students research award that we currently have provides about 4,000 of those scholarships, so students spend 16 weeks during the year doing research. Could we give 8,000? Absolutely. Would it be desirable that 25,000 of the approximately 150,000 undergraduate students receive those research opportunities? Why not? We can dream big, right?

Once they're at university, we have to encourage them to pursue graduate school. Having opportunities to learn what research is about is one way to get them to the master's and doctorate degrees.

Second, we require competitive funding so that they don't get into large debt. Competitive funding would allow them to carry out their graduate studies on a full-time basis, as opposed to juggling jobs and studies. Scholarships or funding can be done either directly with the students or through their professors, who then pay stipends to the students. We need funding to encourage students to continue at the graduate level.

The third one would be the breadth. Our universities have terrific programs that provide the scientific expertise and the knowledge to become an expert in a very fine slice of science and engineering, but they also provide the breadth of other types of skills—the professional skills, the business skills, the communication skills, and the skills of working in interdisciplinary teams—that would be retained by graduates and broaden their skill sets.

Ms. Kellie Leitch: Right.

I recognize that you come from one of the major granting councils. Our focus here, really, is about getting people into the workforce and not so much about getting people to become post-secondary researchers or people who are going to run a large lab.

What I really want to focus on are the components that would make sure those individuals who are just undergraduate engineers would get out into the workforce. Should we be channelling some of your resources to colleges so that we have more engineering technicians and so they get out into the workforce sooner? What are your thoughts with regard to that?

Don't get me wrong. I recognize you come from a large granting council. Your mandate is to do research, particularly in material sciences, but we need people to actually go out and have jobs in the engineering field.

● (1615)

Ms. Isabelle Blain: I would qualify our mandate as one of providing people who are able to carry out discovery and innovation.

Ms. Kellie Leitch: That's fine for you to qualify. I appreciate that.

I think it's very important that we get your thoughts with respect to the jobs agenda and what those components are so that we can get these young people who learn from all those great engineers you have on the research side into the workforce not just as researchers, but as individuals who are applying their engineering capabilities.

Ms. Isabelle Blain: Agreed.

Those skills come from different types of experiences. There are the academic courses per se, but then there are the other experiences that come with the co-op programs, for instance, that combine study with work placement and experience on the job. Some universities really have a big emphasis on co-op programs. The Université de Sherbrooke and Waterloo are examples of institutions that focus on providing experience during the years of study. Summer jobs that are relevant to the field of study would be another way.

What we hear from colleagues and from our discussions with the deans of engineering, for instance, is that often the companies that want to hire a bachelor's engineer require experience, five years worth of experience. How can a brand new graduate develop five years of experience? There's a bit of a disconnect between the expectations of the employers and what the system can provide.

The Chair: Thank you for that response.

Go ahead, Mr. Cuzner.

Mr. Rodger Cuzner (Cape Breton—Canso, Lib.): Thanks very much.

Thanks for your presentation.

I have two questions, and they're completely different.

The first question concerns the jobs that have been created in the country. The government will say that they've created 600,000 jobs. Now, one thing we know is that 80% of those jobs have been created in three provinces in the country—Alberta, Saskatchewan, and Newfoundland and Labrador—and they've been created around the resources.

Having been in Fort McMurray back in the 1970s, I know that NSERC has considerably developed the extraction, the processing, the refining, and all those processes over the years, and it's much more environmentally friendly, much more efficient, and much more cost-effective. All those aspects have evolved over the last number of years. NSERC has had a big part to play in that. They've worked closely with the University of Alberta, and so there's cutting-edge technology that's been developed over there.

It seems in those areas that it's industry and academia, and then NSERC comes in and plays its role. How does that evolve? Do you think you've been as successful in sustainable energy sectors—in wind, in tidal energy, those types of sectors? Have you been as successful, just anecdotally? My thought is that maybe you're not as successful, so why would that be? Is there not yet an industry advocating certain research, and what might it be? Could you just share with me your views on that?

Ms. Isabelle Blain: Well, I think there have been many success stories. Working with the private sector is a contact sport, if you use that analogy. You really need to have very close interaction and to develop a working relationship between academia and industry. It takes time to do that. You start small, and then develop a trust relationship, and then build on from that.

Funding is certainly helping, and over the years we have changed our focus and have come to better understand the key role of effective relationships in transferring knowledge, in working across academia and the private sector. That's where we've been focusing our energies more recently: developing those relationships and helping those relationships to happen.

● (1620)

Mr. Rodger Cuzner: I'm sure everybody around the table finds it strange. They started working on the oil sands in the mid-1960s; now we're a world leader in that technology, and that's fabulous. That's really the engine that's driving the economy now. However, we have tides and winds around our nation. We're a tidal and a coastal nation, and we seem to still be relying on importing technology from other countries. I just find that strikes me funny.

If I have time for another question, it's on the soft skills. You talked about soft skills, and you're about the third or fourth witness who has talked about soft skills. You also refer to complementing skills, and that makes a great deal of sense. Could you expand on the importance of soft skills? Do you try to bring people into science and engineering who have those soft skills? Is there an interview process whereby you try to get those people engaged in the sciences, or, once you get the best and brightest, do you try to develop those skills once they embark on a line of study? If you would, give us your comments on soft skills and their importance.

Ms. Isabelle Blain: I think it's more taking those who already have an interest in science and engineering, those who are already in those programs, and making sure that, through their education—bachelor's, master's, and Ph.D.—they have exposure to more than academic life. It's making sure that they have exposure to what the business sector needs, such as internships and opportunities for them to get out of their university labs and into a different sector, and that they have mobility working and go from lab to lab learning techniques that are different and applicable to different applications.

Those skills can be learned. We have to do more to realize that those are as important as the science expertise.

Mr. Rodger Cuzner: When you're coming in for your landing, I think most people are hoping that the engineer who designed the locking system for the landing gear knew what he or she was doing, as opposed to whether or not he or she wished everybody a happy Easter, or that sort of thing. However, it's been mentioned four or five times now that it's essential that they have the soft skills. That's why my question was posed.

With the interview process, with bringing people up to the next level, is that part of the screening process that you have, or do you just sit down and encourage these people to try to become more rounded individuals?

Ms. Isabelle Blain: It has to be systematic. There has to be a program around the students to provide the exposure, such as getting people from the private sector to come and meet the students for half a day, or the students going to the company's site to talk to the marketing folks, to talk to the people who are in production, so that they learn about the kinds of problems that are faced outside of academia. It won't happen just by sitting in a room and talking to others. It has to be practised, it has to be structured, and it has to be planned so that it will happen, for sure.

Mr. Rodger Cuzner: Thank you.

The Chair: Thank you very much.

We certainly appreciate your presentation. Thank you for coming before this committee.

Ms. Isabelle Blain: It's my pleasure.

The Chair: With that, we'll suspend for about 10 minutes.

● (Pause)

● (1630)

The Chair: We'll recommence our meeting.

We have two presenters: Isidore LeBlond, chief executive officer with the Canadian Council of Technicians and Technologists, and Bonnie Schmidt, the founding president of Let's Talk Science.

I'm sure we will have some interesting presentations.

We'll let you commence, Mr. LeBlond.

● (1635)

Mr. Isidore LeBlond (Chief Executive Officer, Canadian Council of Technicians and Technologists (CCTT)): Thank you, Mr. Chairman, and thank you for the invitation to appear before you today.

CCTT, as it's known, is a national association that was formed in 1972 and represents the interests of over 512,000 applied science and technology workers in this country. We don't represent just one profession, but 14 different sectors, ranging from architectural, building, bioscience, civil engineering technology, chemical, electrical, electronics, forestry, and the last one is this thing called IT. However, of that number, only 18.3% of our workforce are women.

Applied science and engineering technology workers represent the backbone of Canadian employers competing in the global economy. Since 1980, fewer than one in 20 young people has attended university. Canada has done a great job with the promotion of the skilled trades and apprenticeship programs; for that, we say kudos. Maybe it's time to look at the middle group.

We are pleased that our work on National Technology Week, and more specifically GoTECHgirl, has attracted your interest. We are very aware of the skills gap and existing labour shortages in high-demand occupations in Canada.

For me to address this properly, allow me to define the role of technicians and technologists. Architects, engineers, and scientists represent the researchers, innovators, and conceptors. Technologists, on the other hand, co-design, build, plan, manage, and integrate systems. Technicians draw, assemble, troubleshoot, and operate those systems. We need all three groups for Canada to succeed. Simply put, we do not have enough of them today.

We promote a number of different technology professions as rewarding careers, and we do that through post-secondary education at colleges, CEGEPs, and polytechnical institutes through a number of different programs. Some people argue we have made it too complicated for the young folks of today. There are too many choices. That will be a question for another day.

Consider that after two or three years of practical learning, a graduate can be job-ready; that's really what separates the community colleges from the universities. The average starting salary last year was $54,560 for a college graduate in this country. That's not a bad wage.

Over the next few years the number of young people entering post-secondary schools is going to continue to decline. Based on our numbers and a joint research project we did with Engineers Canada, the 15- to 19-year-old cohort peaked in 2009. That was three years ago. We're already on the downslide. The decline is going to continue. The latest forecast, according to some economists, is that it's going to continue until 2020. It's a serious problem in terms of not having enough people to enter the workforce.

The strength of the Canadian economy requires gender balance within Canada's skilled workforce. Our message is clear: how can Julie or Sally or Francine think about a career as a water quality technician or biomedical engineering technologist if she doesn't know these jobs exist?

The CCWESTT is a great example. From May 3 to May 5 this year, the Canadian Coalition of Women in Engineering, Science, Trades, and Technology—hence the long acronym—is hosting their biannual conference in Halifax, Nova Scotia. Our GoTECHgirl program would like to take part in this event yet again, but the lack of funding is holding us back from sponsoring students and mentors, people we think should be allowed to go.

The timing of the event is also questionable. It precludes young women who are in their first year or second year of college from attending because on May 1 they're entering the summer job market. The conference is the first week of May. We see a disconnect.

We did a high school survey last year, carried out in four cities—Toronto, Vancouver, Ottawa, and Halifax—involving young women in grades 9 through 11. Our findings were that, number one, the majority of young women do not have a good understanding of what applied science or engineering technology careers are all about. Therefore, how can they possibly aspire to make a career selection?

● (1640)

Number two, fewer than 42% reported hearing anything about our National Technology Week. More than half expressed negative perceptions of engineering and technology occupations. Young women do not have a large pool of role models to choose from.

Lastly, parents don't encourage their daughters to study math and science in high school, therefore limiting future career choices.

So what are we going to do about it?

Our National Technology Week and our GoTECHgirl campaign are registered trademarks. We have a national outreach program to educate and inform, and a special one that's called “Influence the Influencers.” That would be mom, dad, grandma, grandpa, teachers, guidance counsellors, social workers—anybody who could possibly assist someone to be able to make that choice.

Just to show you a small example of that, a few years ago we approached the Bank of Montreal to provide us with some limited funding. On the back of an RESP contribution envelope, the Bank of Montreal kindly, ten years ago, put “This is for your university”. After a lot of lobbying, we convinced the Bank of Montreal to change it to say “This is for your post-secondary education”, knowing that young kids today have to make a choice. It's a small point, but it's an effective one.

We make extensive use of social media. Coming from the age of “if you can't beat them, join them”, that's where the kids are, so we have to be there. We sponsor day camps, technical day camps, on Saturday mornings at colleges throughout this country. For Sally to get in to go from 9:00 a.m. to noon to try something, get her hands dirty, take a computer box apart, solder an electronic circuit board, anything at all—we do a number of things—and get a bagel and an orange juice, the only ticket required for admission is they must have mom or dad there. Why? We need to convince mom or dad to at least let them experience it.

Those camps are working, and the program is expanding. Do we need it to grow? Absolutely. Do we need more resources? You betcha. That's why we're here.

I have five points for you.

First, we must do more to educate and inform Canada's youth, especially those of visible minorities and the aboriginal workers, of the many different career choices available.

Second, on January 19 we launched our international qualifications assessment program, without one cent of government money. That is a new foreign academic credential recognition service for newcomers to this country. We want to fast-track them. We know they have skill sets. We're providing them with an e-certificate—an electronic certificate—that's stored on our server and that every employer can validate, so no one is going to be copying in fraud. We host it, we keep it. It's an approach.

Employers are our biggest direct targeting campaign. They are demanding a national approach to the skilled workforce, so we're responding. CCTT, on April 1, is creating a national co-op registry for applied science and engineering technology programs. Think of it as a speed-dating site for job applications; if an employer in Calgary has openings, and if somebody from Nova Scotia would like a three- or four-month co-op application, we're going to match them up. We're going to host it. It doesn't yet exist; colleges have been phoning to tell me we have to do it, so we're going to do it.

We welcome the opportunity to work with the Canada Science and Technology Museum, the Canadian Manufacturers and Exporters Association, and the Forest Products Association of Canada. We have partnered with Skills/Compétences Canada and others to address the skills shortage. We have to be working in sync, because we're all competing for the same Sally and Francine.

Last but not least, there's the paradigm shift. Over the next 25 years, the number of Canadians older than 65, myself included, will more than double to 10.4 million. Employers will need to be more flexible and creative in how they look into bringing senior workers —and I'll qualify “senior” by saying 60 and over—into an organization. Like it or not, people will be required to work longer.

Success stories happen when the public and private sectors collaborate to attain a common good. Our current situation in Canada is not unique, compared to other countries. However, how we deal with it will be the ultimate test.

● (1645)

Thank you. *Merci.*

The Chair: Thank you for that presentation. Certainly it's easy to understand where your thoughts are going and what you believe in, and we certainly appreciate your pointing these things out to us.

We'll now ask Dr. Schmidt to go forward with her presentation.

Dr. Bonnie Schmidt (Founder and President, Let's Talk Science): Thank you.

I truly appreciate the opportunity to come and talk with you today. I'm going to come at it slightly differently. I'm not going to spend a lot of time talking about the programs of Let's Talk Science, but I'm thrilled to take questions on them a little later.

I'm going to come at it from the perspective of my experiences over the last 20 years as a social entrepreneur who's been playing in the pre-kindergarten to grade 12 space, and I have to say that when I was listening earlier, I wanted to say something then.

I'll go through this so you'll have a little perspective of where I'm coming from, and I do look forward to questions later.

I've spent the last 20 years of my career working to help ensure that Canadian youth are able to thrive in this country, enjoy a high quality of life, and contribute as engaged citizens.

I was trained as a research scientist. I have a Ph.D. in physiology, but I didn't stay at the bench. During my science training, however, I gained the skills and the attributes that I needed to found an organization and continue to run it to this day.

My journey started about 20 years ago when I started Let's Talk Science as a small volunteer outreach program out of the University of Western Ontario, now Western University, during the economic recession of the early nineties. If you recall, back at that point the granting councils were made quite vulnerable by financial decisions that cut back science and technology research funding quite a bit.

I was a graduate student at the time. I was serving on a number of committees at the university when the sheer panic came through the research community that people didn't understand what research was about and didn't understand the value of science and technology. At that point, it was basic science versus applied, and now it's termed foundational and translational.

As a grad student I thought there was an opportunity to do something about it, because I believed very deeply that research was a cornerstone of Canada's economy and Canada's future. I started a little project with about six grad students back in 1991 and I stayed with it. We now have partnerships with 36 universities and colleges, work with about 3,000 volunteers across the country, reach hundreds of thousands of young people every year, have trained teachers, have done a considerable amount of research into the impact of what we do, and we began to start very early with a program that we offer called Wings of Discovery that's used in child care centres.

Since the launch, we've reached well over 2.5 million young people with our programs, most of which are delivered by volunteers. I think we've mobilized at least 10,000 unique individuals; the majority of them are university and college students, principal investigators, and industry professionals. I'd be happy to come back to talk to you about that later.

We've trained about 30,000 teachers and early childhood educators. We've created quite a lot of learning materials that are used from coast to coast; despite the fact that it's all jurisdictional domains here, with fifteen education systems, we've been able to create programs and materials that fit right across the country. We've also done quite a lot of research.

I'm here today to talk about four lessons and learnings that I've reflected on. I like to wonder a lot when I do my work. I hope it will help you with your report.

I'll start by saying that when I talk about science, I'm using the word really broadly. It's life and physical sciences, technology, engineering, and mathematics, sometimes called STEM. I like to say science, because a lot of people think I talk about trees when I talk about STEM.

The first thing is that I really do believe that science learning underpins the talent development needed for the 21st century, and if your report can build a connection with the creative economy, I think you can go a long way in helping to dispel the myths that science is not necessarily underpinning much of the talent that is needed; in fact, it's a creative human activity that leads to our understanding of the world and it underpins all the critical global issues that we face today, but many people don't see it. They don't see the horizontal integrator role that science, technology, engineering, and math play.

It's also used by the person who fixes your cellphone, by your doctor, by your orthopedic surgeon, by electricians, farmers, and hairstylists.

Science shouldn't be equated with research laboratories, but it should be equated with jobs when you're working on this report. That will go a long way to helping perceptions. Science learning prepares people for high-demand occupations, but it also prepares people for the lower-skill jobs, which don't look the same as they did a generation ago.

Unfortunately, most young people don't realize how many doors science can open or close, and they drop it quite early, especially chemistry and physics, yet the number of jobs that require college training or skilled trades training with a science component outstrip those that you get in a university pathway. We need to do more to promote the value of science learning for all jobs, because too many young people are simply closing the doors very early because they don't complete the programs they need.

● (1650)

It's that particular fact that inspired FedDev Ontario last year to launch its youth STEM initiative. With an investment from that agency, Let's Talk Science has been able to transform how we work. We've been tackling the issue in new ways across southern Ontario. We're working with kids, teachers, post-secondary universities and colleges, industry, aboriginal communities, other not-for-profits, and both levels of government to offer programs focused on building the talent pipeline.

My second message is that talent development starts in the sandbox. It demands a long-term vision that's implemented with patience and with consistency. Too many discussions on talent focus of the generation of Ph.D.s, and we're starting to see that recent investments are resulting in more people pursuing graduate studies. However, for every 143 students who graduate from high school, only one is going to end up with a Ph.D. in a science discipline.

Just imagine what we can do if we bring that same focused thinking to the issue a lot earlier in the system. We can fill the skills gap. We can't let up at the post-secondary level, but we need to get a bigger pool from which to draw. In fact, Let's Talk Science has been working with NSERC, CIHR, and CFI, because they also understand that we have to have a bigger talent pool in order to even get to the Ph.D. level.

We need to scale the effort to ensure that we're not leaving anybody behind. Let's Talk Science starts in a sandbox with programs for child care centres. We've had some really interesting stories coming out of the aboriginal head start sites on reserve. We've been shocked at the uptake by that community with some of our early science programs for young children.

Once that interest is sparked early on, we have to nurture it throughout kindergarten right through to grade 12. We need to make better connections to jobs all along the way. The effort won't be wasted, because jobs in every field benefit from analytical, curious, and critical thinkers.

My third point is that what gets measured gets attention. Never have I realized that so much as this year, when we've undertaken a benchmarking study that will be released in May. It's looking at the progression of science learners in elementary, high school, and post-secondary, both university and college, and connecting it to the job forecast, working with HRSDC and the sector council to see where those job forecasts are.

What we've learned is that because there is a lack of consistent reporting and tracking across the country, it's very difficult to gather the data and give you a good picture of what's happening. Without easy access to the data, we can't have a good grasp of what's actually happening.

My last point is that Canada is the only developed country that doesn't have a national education ministry or a secretary of state for learning or for education. There is no formal vehicle that regularly convenes all the stakeholders or is even positioned to drive a national vision on learning or education.

I spoke a little bit earlier about the attempts of Let's Talk Science to fill that void as it relates to science learning. We work formally with seven ministries of education and seven teachers' associations on our newest program, called CurioCity, which is a blended web-based program for grades 8 to 12. It has been the first vehicle that has allowed us to convene a larger stakeholder group, with many ministries wanting to be at the same table to talk.

For large-scale success and to not leave anyone behind, we really can't just keep taking a regional focus; we have to get to the point where we're talking a national vision. In fact, in countries that can implement a national vision, we see spectacular growth. In Canada, the proportion of undergrad students who pursue science and engineering degrees has been sitting pretty stagnant at around 20%-25% for decades, whereas China has more than 50% of its undergraduates in science and engineering disciplines. I'm working on a paper looking at science learning in Canada versus China, and we're seeing this with pretty reliable numbers. It's interesting; it's different in China, because the engineering degree is almost the de facto bachelor-level degree.

In conclusion, I want to leave you with the fact that science learning really does matter for 21st century skills. We need to start early, and we need to make a strong national effort that can be measured. If we don't, we will just continue to slip behind.

The highest-demand jobs in a creative economy require people with the skills and knowledge that are developed by science learning. Many jobs that are perceived to require low skills have really been transformed and require science. All jobs benefit from people who are analytical and curious. They're the very qualities that drive innovation.

I want to leave with you the idea that Let's Talk Science is here to help. We've been doing this for 20 years and would love to bring the success to bear that we have learned at many of the regional levels to get to the next level for Canada's future.

Thank you.

● (1655)

The Chair: Thank you very much.

We'll start the first round.

Ms. Crowder, go ahead.

Ms. Jean Crowder: I'd like to thank both of you for two very good presentations.

I'm going to start with Mr. LeBlond. You indicated that 18.3% of women work as technicians or technologists and that your organization is doing a tremendous amount to try to raise the level of awareness.

If you could make a couple of key recommendations—two key recommendations—that the federal government could do, what would they be?

Mr. Isidore LeBlond: Targeting to young women specifically, clearly the outreach program has to be done from grades 6 to 9. We have to drill down lower. Aiming at the high school level is too late. That's number one.

There have to be initiatives. We know that education is a provincial sandbox, but we do work with all the ministers of education on the national level to help us promote our National Technology Week. We clearly require more tech camps and stuff to be brought into those schools. We need industry to come in and show.... It's the *CSI* factor, as I tend to call it. You can have demonstrations. You can have Let's Talk Science come in and do presentations in the schools at the younger level.

In 1967 we had the train that went across the country. That type of thing will gather support and interest along the way.

Ms. Jean Crowder: It sounds as though there needs to be funding as well.

Mr. Isidore LeBlond: It goes hand in hand. Yes.

Ms. Jean Crowder: Yes.

One of the things that you did touch on as well is where young people get their information. Another study I referenced showed that for the bulk of young people in grades 10 and 11, those high school students got their information from their parents and their peers. Those were the two biggest groups. That's a tough group, actually, in regard to making sure they have adequate information. Your initiative of making their admission ticket bringing their parents sounds like a great one.

Mr. Isidore LeBlond: Thank you.

Ms. Jean Crowder: Ms. Schmidt, I want to touch on a couple of things.

You made a couple of recommendations. You talked about the need for some sort of national leadership. I would agree with you. To begin with, our workforce is mobile. There are no barriers from province to province. We know that what employers end up doing, in part, is poaching people because they can't get the skilled workforce they need.

When you talk about a national education ministry or some other formal vehicle, are you familiar with other countries that have this arrangement in place? You referred to what China has done specifically to encourage education, but are there other countries that may have a national ministry that does this kind of coordination?

Dr. Bonnie Schmidt: All other developed countries have a national ministry of education.

Ms. Jean Crowder: All of them?

Dr. Bonnie Schmidt: We're the only developed country.... I mean, we're not going to put the Constitution on the table, but we do have to come up with a strategy to have a national vision—for example, a standard approach.

What has happened in China over the last decade is mind-boggling. The only reason I'm more comfortable with China lately is that I've been asked to do a paper, and the colleague I brought in to co-author it is actually a professor with the National Institute of Education Sciences in Beijing, so I'm learning more about how it works.

China has a national education department. They have a national institute that creates the curriculum. It even creates the learning resources and then puts that out into the provinces to implement, so they have a cascading opportunity; when they decide to make change, they make change quickly, and change has happened in the last decade.

The other thing is that there's a culture there that strongly embraces science and technology as being really important for society. In Let's Talk Science, we're about citizenship as well as employment, and it is a cultural attribute that is embraced there. I believe that when parents are mobilized and understand the value of science for their kids' future and when you have a cascading mechanism to have a vision that will align people's work, you can get things done very quickly.

Ms. Jean Crowder: Do I still have time, Mr. Chair?

● (1700)

The Chair: Yes, you do.

Ms. Jean Crowder: You referred to the aboriginal head start program on reserve. This committee has heard a number of times that a significant pool of first nations, Métis, and Inuit young people coming up are a largely untapped resource. Could you say a little more about why that particular program seems to be successful? What are the elements of it that are making it work?

Dr. Bonnie Schmidt: Let's Talk Science does connect with aboriginal youth across all of our program areas and in all of the provinces. In fact, we have our efforts guided by a national aboriginal advisory panel that has most of the national agencies helping us.

With respect to our Wings of Discovery program, I have to say that it was a real surprise. We did have a first nations person as one of the authors, but it was never created to be an aboriginal science program.

When we started to see the uptake in the resources, I asked around a lot, and what we learned was that it was very student-centred. For us, science is the process of learning and engagement, not the content and the outcome.

The communities really liked the fact that it was student-centred, very holistic and integrated, and also relevant, in that it was looking at engaging children in learning about the world around them, the world they actually live in. I think relevance is a real problem throughout the school system; in fact, our research has shown that teenagers don't see the relevance, and that's why they're leaving.

The Chair: Thank you.

Mr. Shory is next.

Mr. Devinder Shory (Calgary Northeast, CPC): Thank you, Mr. Chair, and my thanks to the witnesses for coming to this committee this afternoon. It will certainly help us to complete our study.

Mr. LeBlond, you talked about the foreign qualification recognition program. I'd like you to expand on how it works. Specifically, you said that you have been successful without any funding from the government. How does it work, and how successful are you?

At the same time, it has come to my knowledge that some foreign students come here for foreign qualification. They complete their courses as technologists, etc., and they have a valid work permit after that, but they are unable to be hired because they don't have Canadian experience. I'd like you to comment on that as well.

Mr. Isidore LeBlond: The International Qualifications Assessment Service, known as the IQAS, was launched on January 20. Its purpose is to accelerate the movement of foreign-trained people into small and medium-sized businesses—get them in at the entry level and get them working now. It's a pre-screening tool; it is not about licensure. We're not talking about rating their experience.

It's a web-based application. We have built, over the past five years, a database of over 7,500 technology programs in 69 countries around the world, a database we host on our server. We've gone in and validated programs from those 69 countries. If a graduate comes with a proper diploma and if it's in our database, we already know the program. We charge that individual $100 to do an assessment. The assessments are done within a 21-day period. It's not three months or six months—it's done within 21 days.

We give them an e-certificate. It's a PDF file that says, for example, that their credential, if they came from China, is substantially equivalent to a civil engineering technician in Canada. They can take that to a perspective employer.

The Canadian employer who doesn't have a huge human resources department can look at it and understand the situation. The credential might be in Chinese, but the employer can read this Canadian certificate, which is bilingual, and he will know the equivalencies. We're hoping that this is going to address the small and medium-size employers.

With regard to your question about those who are trained in Canada, we hope the co-op registry will allow those students who studied in Canada to apply for some of those jobs to get the experience they need, the kick-starting. If they graduated from a Canadian program, we want to match them up with employers. Employers are going to tell us their demands. I expect to have a huge list from employers with the skill sets they're looking for. If we can get access to the graduates coming out, we will gladly allow them to view the list and let them do the matching.

Mr. Devinder Shory: Let's talk about mobility, because mobility is also important in filling the gaps in each region of our country.

The CCTT had a mutual recognition agreement with some countries—the United States and the U.K., I believe.

Mr. Isidore LeBlond: That's correct. We represent Canada on two different international accords.

● (1705)

Mr. Devinder Shory: Should such agreements be signed with foreign countries? How beneficial are these agreements for Canadians and for technologists from these foreign countries? Are there any plans to sign more agreements of this kind with other countries? If so, which other countries are on the radar?

Mr. Isidore LeBlond: Okay. Let me just retrace the steps, then.

CCTT is Canada's signatory on two accords, the Sydney Accord that was signed in Australia in 2001 and the Dublin Accord for technicians that was signed in Ireland in 2002. They validate a student graduating from one of our accredited programs in Canada. Right now we are sitting at 254 nationally accredited programs out of about 500, so it's about halfway.

Any graduate coming out of one of our recognized programs has international mobility rights in any of the countries that are part of the accords. The accords are an international secretariat, essentially based out of the Commonwealth, so it includes Australia, New Zealand, the U.K., Ireland, and South Africa, and now we have Taipei and South Korea joining. There are a number of others that are knocking at the door and want to be admitted at the next meeting in Australia this June, and it's going to expand. The U.S.A. came in two years ago, so they're part of it.

It's more of a one-way street: we're seeing more international people coming to Canada than Canadians going abroad. It allows Canadian graduates to join these multidisciplinary engineering teams —the Lavalins, the Bombardiers. Their credentials are recognized. If those companies want to bid on jobs around the world, their credentials are already validated. It's helping Canadian companies compete abroad, so it's a big advantage.

Mr. Devinder Shory: Did the Government of Canada help CCTT to conclude these kinds of agreements, yes or no? If no, did the Government of Canada in any way help you to finalize these kinds of agreements among foreign colleges or universities?

Mr. Isidore LeBlond: The first answer is no, the government has not helped yet, and yes, we're open for discussions. Travel is expensive.

The Chair: Thank you very much, Mr. Shory.

We'll now move on to Ms. Hughes.

Mrs. Carol Hughes: Thank you very much. It's a great presentation.

There used to be a time when we used to see lots and lots of job fairs. I'm not saying there are none now, but there just doesn't seem to be as much focus as there used to be. We do have a lot of people who are unemployed. I'm just wondering if there's an outreach going on there. Is there something that the government could do in the way of outreach? Could they say, "Okay, you are unemployed. Here are some of the skills that you have. Do you know it's actually connected to science? Here's what you could do to move yourself a little bit closer into this field where there is a shortage."?

I'm just wondering if you see a connection in that at all, because you talked about the registry that you're creating. I'm just wondering if this would be a way to tap into it, because there are people out there who do have the skills and may not recognize this is something that could be an open door to them.

Mr. Isidore LeBlond: Absolutely. I think that's one of the avenues we should be pursuing to match people who don't have jobs, but who certainly have the skill sets, with employers. Absolutely. That registry doesn't exist today, so we're going to be pushing the envelope starting on April 1.

Mrs. Carol Hughes: There is one other thing I wanted to ask you, Mr. LeBlond, and then I'm going to go to Mrs. Schmidt.

Between 2007 and 2009, a number of studies on labour markets in the field of engineering and technology were done by CCTT, Engineers Canada, and HRSDC. I'm just wondering about the results. Were specific recommendations provided? I'm just wondering, because I'm assuming that some of them may have been followed up on and some of them may not have been.

Mr. Isidore LeBlond: You're correct. That study was commissioned and supported by HRSDC. It was co-managed by Engineers Canada and us. It contained a number of recommendations in terms of immediate ones and a longer-term vision. The better part of the short-term ones have been acted upon to various degrees; the longer-term ones have not, because most of them involved serious capital. More dollars were attached to them.

A lot of it was going back and working with industry, trying to engage the employer groups. We and Engineers Canada are so wide that we were supposed to be dealing with all our 14 sectors equally, but it's hard to deal with the IT sector without letting go of somebody else.

The long and the short of it is there are a lot of key action items still on the table and under discussion, and it's part of the ongoing.... It's probably got a shelf life of another two years to achieve some of those. We're not going to achieve them all.

It was great research and a great paper. We put on sessions in Atlantic Canada, in southern Ontario, and in western Canada, and we were well received by industry. They said, "You're on the mark. Here's the track. What are you going to do to help us address the skills shortage?" That was the thing that came back to us.

● (1710)

Mrs. Carol Hughes: Just to recap on that, it is critical to follow through on those long-term recommendations. Even though it may require some capital, the problem is that if we don't invest in those long-term recommendations, we won't be able to move the economy forward. Sometimes there's a detriment there. You do need to invest to keep the economy moving. If you keep cutting back, then you may end up in a worse position than what you usually are.

Ms. Schmidt, if you had two key issues, what could the federal government do in order to move the agenda forward on this particular file?

Dr. Bonnie Schmidt: I think part of it is moving from a regional to a national vision and understanding how to scale things. How do we take what we know is working in smaller spaces and make it work at a much larger level or with new audiences? I'd be thinking about scaling and about not being timid to move into the whole domain of talking about learning being a continuum of life and not something that happens at the end of a university degree.

Mrs. Carol Hughes: I agree with starting them young. I mean, my son got involved in sciences through a YMCA program, and he's now doing his master's in biomedical science, so I really appreciate that.

Dr. Bonnie Schmidt: If there's an opportunity to have a round table on a national vision for it, you'll probably find that it will begin to align people's efforts. Right now it's so disparate; there's no clear national definition of what an innovation culture looks like, what kinds of skills we need, and what kinds of attributes are there to help align all the different groups' work to try to work together and achieve that.

The Chair: Your time is up.

Mrs. Carol Hughes: I was out of questions, so that's perfect.

The Chair: There you go.

Mr. Butt, you're next.

Mr. Brad Butt (Mississauga—Streetsville, CPC): Thank you very much, Mr. Chair.

Thanks to both of the witnesses for being here today. I'm hoping I'll get questions in for both of you in my five minutes, but I'll start with Ms. Schmidt.

I'll share a family story too. My daughters are eight and 12. I know that my eight-year-old daughter talked for a week about the visiting scientist who'd come to her school. She thought it was just the bee's knees, for lack of a better way of saying it. She was so excited about that. Now, whether that will lead to her having an interest in a career in the sciences from grade 2 to when she eventually gets there....

I want to follow up on some of the things you were saying about how we, as a federal government, can play a better coordinating or leadership role, given that we know elementary education is clearly in the domain of the provinces. Is there any other specific thing, other than a program like the one that I think of from my own personal experience? I think it had a real impact, but it was only one day out of the 190 days of school that these kids go to.

Do you have ideas on how we can expand that, and do more of it, to get young kids in grades 2 and 3 talking more about sciences and being excited by science and math?

Dr. Bonnie Schmidt: It's also very possible that you might want to choose a third party to be the broker to bring everybody together. Let's Talk Science works with 36 universities and colleges from coast to coast, with many industries, and with the federal government scientists who want to get involved. We mobilize 3,000 people who themselves are in the science workforce or are going to be in the science workforce. We do go into schools and community centres all the time and work with kids. You have to have a different kind of program for each of the different ages and ranges.

In addition to doing the focus things—you parachute in and then you leave—we've begun to work more on how to have programs that can be implemented and have a life of their own in the classroom. You do have to get the teachers involved. You do have to get the voluntary sector involved.

Job fairs and all that are great, but you have to think strategically on how to systematize it. That's really where we're at right now, systematizing the work that began 10 or 20 years ago with role models in the classroom. How do you make that a permanent feature of every child's experience in the summer, in school, after school? It's a cultural piece.

It's definitely doable, and there is a role for the federal government.

● (1715)

Mr. Brad Butt: Just to follow up on that, I can tell you about one of the things I've done with a couple of schools I've visited in my riding. Here at the House of Commons they put together a teachers' kit, an absolutely fantastic kit. When you go and talk to a grade 5 class that's learning about Parliament, it's a leave-behind. The teachers are grateful for it, because the provincial ministries of education—well, I can only speak for Ontario—aren't doing it. It's a part of the curriculum, but the Ontario curriculum isn't giving them enough. When I come and do that, it has DVDs and all kinds of other things that they can use in the practical experience.

Could you see the federal government—through FedDev, perhaps, or the minister for science and technology, or Industry Canada or HRSDC or whatever—playing a role and maybe putting that kind of kit together so that the provincial ministries of education could then avail themselves of it?

Dr. Bonnie Schmidt: We do that now. We've actually put lots of kits together for use by teachers or by volunteers. Starting with pre-K and kindergarten, they look at friction and movement. They go all the way up to grade 12, where they look at leading-edge biotechnology. We are able to do that.

The other piece that's really innovative is our web-based blended learning program. That's actually connecting people with classrooms virtually and creating a place where teachers can receive training and support using a medium that the kids like and using a medium the teachers can get to on their own time. It really is about supporting educators, and it is about building the connection across the community with a clear vision of what we're trying to achieve at the end of the day.

There are lots of things—kits and resources—and we could do all of that.

Mr. Brad Butt: Mr. LeBlond, one of the other issues I and probably all MPs deal with concerns older workers. You mentioned senior workers and getting the industry to realize that hiring people who are 60 or 62 is actually a good thing to do if they have skills or experience. I have people coming into my office and meeting with me who are in their late fifties. They worked for one company, but they're no longer working there because of the economic situation: the company's shut down, or they're scaling back or whatever.

These people still have those really viable skills in many of the occupational areas that your organization represents. How do we get the message out to businesses that it is still a good thing to hire somebody who's 58 or 59 or 60? They may still get five to ten years of additional work out of an individual like that, because they want or need to continue working. Do you have any strategies for how we can encourage employers to hire older workers in these skill areas?

Mr. Isidore LeBlond: I won't go down the road of tax breaks or incentives, but certainly industry needs to hear it more than once. We have to do a major lobbying campaign to market to them and to indicate that they're part of the solution. There's no one silver bullet here; they're part of a solution.

A lot of the seniors have great skills and can teach some of the younger workers maybe two or three days a week. A lot of people I know don't want to work five days, but maybe you'd want to take two seniors to get five days of employment out of both of them.

It's going to take a little bit of public relations. We need to engage these companies, and all it's going to take is for some companies to start leveraging others, such as consulting companies, until the word gets out, especially in the construction industry or in any of the infrastructure programs. I'm not talking about a 70-year-old senior citizen putting up a steel skyscraper or pouring concrete, but there are some of the other tasks that they are very capable of teaching and transferring. They're going to be able to be those mentors that we seem to have lost in this country over the last 25 years.

● (1720)

The Chair: Madame Perreault, do you have a few questions?

[*Translation*]

Ms. Manon Perreault (Montcalm, NDP): Thank you.

My questions are for Ms. Schmidt.

Earlier, you said that students drop science courses much too early. Are they doing so to enter the job market, or are they switching their field of study altogether?

[*English*]

Dr. Bonnie Schmidt: That's a very good question. I don't know if they're changing disciplines. Do you mean they're dropping out at the high school level?

[*Translation*]

Ms. Manon Perreault: Yes.

[*English*]

Dr. Bonnie Schmidt: What we're finding with our benchmarking study is that typically at the end of high school, only about 40% to 50% of students have completed their biology courses. About 20% to 30% have completed their chemistry, and 10% to 20% have completed their physics courses. The polls we've done suggest that they drop out for a few reasons, one of which is that they don't need any more credits to graduate from high school. About half of them who don't continue on say they don't need to. It's not required, and they're not seeing the connection with future jobs, so why work harder than they need to if they don't need it?

In our poll, 15% said they'd already learned enough in their science courses to help them with their everyday life forever, so they're not seeing the relevance of science.

I believe very strongly it's the relevance and the lack of clarity as to what awaits them. Many young people have no idea that about 40% of college programs require or recommend optional science and math credits. One of the fastest-growing areas in the college system is foundational or remedial science and math programming.

So they're dropping it because they don't know. Their parents don't realize how important it is and how many doors get cut off.

[*Translation*]

Ms. Manon Perreault: Is the reason that young people do not know they need it to meet credit requirements or to open a door down the road? Are they poorly informed or do they simply disregard that information?

[*English*]

Dr. Bonnie Schmidt: I believe it is very much that they are poorly informed, and I go back to the parents as well. There was another survey done last year that asked parents about their perceptions about the importance of science. New Canadians were very high in their recognition of that. Canadian parents were less so, and first nations parents were much less so. Awareness of the fact that the world has changed and that jobs require more and different skills is a huge problem.

The second one is relevance. Much of the content at the high school level is not really positioned into a framework that shows its relevance or its application to a job.

[*Translation*]

Ms. Manon Perreault: Does one Canadian province produce more science students than the rest?

[*English*]

Dr. Bonnie Schmidt: It's interesting you ask that. We will be releasing our study later in May.

We looked at a few provinces. One of the quite surprising things is that Saskatchewan is graduating a higher proportion of students from their high schools with credits in science. When we looked into it more, we found that there are fewer options; kids have to complete more science credits, and they have fewer choices. It isn't necessarily that they are doing it better; there is less choice and there are more mandatory science credits.

[*Translation*]

Ms. Manon Perreault: Thank you.

I am going to change topics. Earlier, you said that you do not receive any government funding, but I also read that—

[*English*]

Dr. Bonnie Schmidt: I didn't say that.

[*Translation*]

Ms. Manon Perreault: All right, I misunderstood.

I also read that yours is a non-profit organization. What are your main sources of funding?

[*English*]

Dr. Bonnie Schmidt: We have pretty good distribution of our revenue. We have funding from FedDev and we are supported by three of the granting councils, but in small, peer-reviewed grant applications. We have good funding from industry partners and foundation partners, and we have a small stream of earned income as well.

We are quite diversified. A growing number of individuals are realizing that it is a good cause to give to. We are a registered charity.

● (1725)

[*Translation*]

Ms. Manon Perreault: My last question will be brief. Is there a program specially designed to attract more women?

[*English*]

Dr. Bonnie Schmidt: We used to have one. I began to get many calls from the parents of boys and from science consultants and coordinators at school boards saying they were having far more challenges keeping boys in the system than girls. I know this is a really sensitive area, but through elementary and high school it's very important that we look at raising the bar for everybody and make sure everybody has opportunities.

You start to see differences in gender participation a little later in the pipeline, but we are in dire risk of losing boys right now. It's also happening in the sciences at the high school level. For those reasons, we no longer have gender-specific programming.

The Chair: Thank you.

Do you have a concluding remark, Mr. LeBlond?

Mr. Isidore LeBlond: No.

The Chair: Okay.

Thank you very much for your presentation. We appreciate your attending.

With that, we will adjourn.

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