



SCC Engagement with Academia Strategy

March 2020



Standards
Council
of Canada

Open a world of possibilities.

Canada

Introduction

Proactive engagement with academia within Canada's standardization system is a key objective for the Standards Council of Canada (SCC). Awareness, training and guidance are required to position academia to effectively incorporate standards into curricula and promote students' use of standards later in their professional careers. SCC intends to help faculty and future professionals participate in standardization activities, as students from higher learning institutions are the next generation of technical experts, who will be developing the standards of the future. Therefore, SCC is considering avenues for effectively addressing succession planning for the Canadian technical experts participating in international standards development.

The need to develop a strategy for SCC's engagement with Academia originated from the work performed on the SCC's Young Professionals Standardization Framework (YPSF), where it was identified that out of 3,300 SCC members, roughly only 16% are under 40 years of age. SCC recognizes the important role that Academia plays in providing guidance, developing and preparing future professionals so that they understand and advocate for the need and benefits of, the standardization and conformity assessment. The proposed framework will assist in strengthening links between present actors of the standardization network and academic communities, providing benefit to both by bringing standardization and conformity assessment to the forefront of the leaders and professionals of tomorrow.

With this objective in mind, SCC reached out to various stakeholders within academia to gather information, ideas and recommendations that helped the development of a strategy tailored to our objectives. Extensive research was also conducted on current initiatives offered by academia, SCC accredited Standards Development Organizations (SDOs), the International Electrotechnical Commission (IEC) and the International Organization for Standardization (ISO), as well as other National Standards Bodies of ISO and IEC to identify best practices and opportunities for collaboration. Further feedback was received from members of the SCC Young Professional Task Force and other external stakeholders.

Strategic Objective

The framework for the Academia Standardization Engagement (ASE) strategy is a fundamental step with the aim of developing cooperation with academia in a systematic way. The strategy will guide SCC's engagement with academia in order to achieve goals such as: awareness building, incorporation of standards in curriculum, and participation of academia in standardization activities to ensure succession planning for the Canadian standardization system.

Educating leaders and professionals of tomorrow about the critical role standardization will continue to play in a strong and successful future is a global priority. SCC values the importance of young people understanding standards; what they are, what they do and the positive impact they have on their careers, organisations, the economy and society. During any of these stages it's imperative for these budding professionals to understand the role that standards play as an important business tool.

In this context, SCC's ASE strategy aims to:

- promote standardization activities to academia
- strategically engage with this target audience while taking into consideration varied levels of standardization awareness and knowledge, geographic location, diversity, and accessibility to standards
- increase the knowledge of standardization through inclusion in academic curricula, in order to better acquaint next generation leaders with the benefits of standardization
- encourage participation in standardization activities through training, raising awareness and other standardization initiatives; and
- engage with university/college students and professionals early in their career cycle as they are thinking about their transition from education to employment.

Target Audience

For purposes of this engagement strategy, the identified target audiences are:

- students enrolled in learning institutions and/or faculties
- faculty
- researchers
- senior academic administration

As a first phase of engagement, SCC will focus on the following:

- Increasing the availability of standards to academia
- Awareness and capacity building
- Incorporation of standards into curricula

The student demographic is an essential factor in the long-term sustainability of standardization within Canada, therefore requiring serious consideration and action. All stakeholders need to determine how the next generation entering the field of standardization is similar or different from preceding generations and how the strategy needs to be adapted as a result.

Identified Challenges and Potential Solutions

Challenges for academia participation in standardization activities include:

1. Lack of Standardization Awareness and Role

The knowledge and understanding of standardization by academia is usually overestimated.

Research indicates that benefits of standardization are not sufficiently known by stakeholders, which points to a lack of awareness. A potential cause seems to be resulting from the fact that standardization is not adequately integrated into education programs.

Technical standards are often used in engineering courses as a reference to introduce technical content. On some occasions, the standards are directly used in classrooms or for assignments and projects. However, it is observed that the use of standards has been considered from a narrow technical perspective, and it is rare that the focus is on how standards are developed, how the standardization system operates, and standards development best practices. The consideration of standards in studies related to business, strategy, trade, entrepreneurship, innovation and social sciences in academia is additionally less prevalent when compared to technical disciplines.

Knowledge of standards plays a significant role in most of the areas above, yet it is recognized that standards are rarely a significant component of curricula. It was recognized that the lack of awareness about available standards and opportunities are barriers to incorporate standardization in areas of study. In addition, graduating students, with limited knowledge, only encounter standards later in their working years.

The following summarizes some of the key challenges:

Standardization awareness — Given that academics and students have a narrow focus on their research and program of choice, many individuals from academia have simply not heard of standardization or the specific role of standards within their profession.

Standardization role — The work of standards is often at a high level within an industry or profession; and therefore, its activity may not be apparent to students. Individuals from Academia may have little knowledge about the role that standards play in their industry or profession and how they could contribute to developing standards.

Career benefits — Since students are in the early stages of their careers and have limited to no experience with standardization, they may be unaware on the how knowledge and participation in standards can be an asset to their careers, allowing them to learn further, and support their personal and professional development goals.

Various solutions to overcome these challenges include: ensuring flexible engagement options such as allowing virtual participation; developing a communications strategy to effectively communicate opportunities; conveying to committee chairs the importance of involving academia and young professionals; researching to identify key stakeholders followed by outreach to the right audiences; engaging with academics and professional organizations to incorporate standards into curriculum; and being constantly open to discussing and reviewing the participation models with academia.

2. Funds, time and resources

It is no surprise that Academia currently lacks access to standards. With limited program budgets, academia currently has less discretionary funds available to enhance their courses, and their freedom to expend organizational funds on standards and/or development of standardization curriculum is more limited. Due to the lack of affordable options, there is a notion that standards are not cost efficient to incorporate in curriculum.

Between teaching and research, academic professors and instructors are often short on time and unable to commit to develop content to include standards education in their regular curriculum. It has also been noted that engaging students is a significant challenge, given the variety of learning and volunteering opportunities at the disposal of Canadian students. In the absence of formal standards education at academic institutes, it is also challenging to attract graduating students in standards related businesses.

In addition, lack of resources from national bodies and key stakeholders make it difficult to take initiatives to actively support the engagement of academia.

A sustainable program tailored to academia is needed to address these challenges that face all standardization partners in the network. Students and researchers are motivated by networking and mentorship connections. The standards network should collaboratively develop program offerings that link and leverage its existing offerings, best practices, resources and knowledge of existing national and international programs to address these gaps and achieve common goals.

Students need to be given the flexibility to participate and realize the benefits of drawing on both technical expertise as well as a variety of soft skills. Students in technical studies can benefit from standards education along with written and oral communication, teamwork, etc. that give them an added advantage in the professional work environment. Additionally, encouraging virtual participation by leveraging technology, such as teleconference, webinars or video conferences, will promote uptake of standards knowledge and improved access to training for diverse academia and young professionals' audience alike.

3. Tools to participate

As with young professionals, a lack of tools and access to correct standards information to facilitate participation was also identified as a barrier for academia's involvement in standardization. Due to this lack of access to information on standardization, academia is often unsure of where to seek relevant information for their standards related activities.

It was also identified that there are too few academic publications exclusively on standardization. To integrate standards related education, it is also important to increase publications on standards to support teaching standardization.

Offering academia with a wide range of tools such as access to standards for teaching, varied standards related training, awareness and networking opportunities, mentorship programs, and a centralized hub of information, will facilitate their increased engagement and participation. In addition, making information on the fundamentals of standardization activities readily available would encourage interest and participation in the standards network.

4. Value proposition

As they pursue their career and build their skills and abilities, it is important for academia to seek opportunities that will result in personal and professional growth. It is important that academia develop an understanding of the value and role that standardization plays in Canada. **We must provide academia with value propositions that meet their needs or capabilities.**

While developing standards related activities or curricula for academic institutions it is necessary to respond, first and foremost, to the question “what’s in it for me” to establish the objectives and motivation for students, researchers and academic professors to participate.

The student of today is the user and developer of future standards. Therefore, it’s crucial for students to become acquainted with standards and the standardization process during their studies. Advantages for participating in standardization activities for students include:

- **Access to knowledge:** standards are an undissipated source of knowledge within the industry/sector they operate;
- **Career boost:** being aware of the importance of standards and knowing how to use them is key to becoming a successful professional;
- **Study aid:** students can consult standards in order to professionalise their thesis or as reference material; and
- **Training:** SCC along with partner organizations can give students online access to free training on standardization.

As recommended above, the skillset required for standard development draws on both technical expertise and a variety of soft skills. It is recommended that standard education opportunities be part of continuing education and formal academic programs to provide a holistic approach to standards awareness across all levels within academia.

Academia benefits by having an enriched curriculum that raises awareness of the role of standards and standardization in STEM, law, public policy, business, and other related or multi-disciplinary fields. Educational institutes that are considering standardization as part of their curricula can benefit from cooperation with SCC and partners within the standardization network to make it easier to teach their courses as well as facilitate research on standards related topics.

5. Knowledge gap

Academia tend to think they don’t know enough about standardization processes and its operating environments and as a result, feel intimidated by its complexities. On the other hand, organizations’ members/experts are either retiring or nearing retirement resulting in them leaving the organizations’ standardization activities. There is a real need for organizations to build in succession planning in their organizations to transfer the knowledge to younger generations.

Because the subject of standards is highly technical, individuals most knowledgeable in their fields do not have the necessary skills to transfer that knowledge effectively. An academic professor with strong teaching capabilities is not necessarily a standards development expert and may be unable to provide accurate industry information on their own. As a national body, SCC plays a crucial role connecting industry and academia together and in return creating or sharing relevant standards knowledge as an output.

These knowledge gaps can be addressed by ensuring that education on standardization is extended to academia and students to ensure effective succession planning. There is a need to identify successors, develop guidelines for effective transfer of knowledge, identify and target specific focus areas for engagement of academia such as committees with an older than average membership or committees whose standards would benefit from researchers or academic professors. A potential solution to address the knowledge gaps between standards experts and academia could be by facilitating a ‘train the trainer’ program. In this approach, academic professors are equipped with necessary knowledge and understanding of standardization so they can educate larger audiences.

Standardization Engagement Strategy with Academia

Upon review of the feedback received, previous consultations with academia, and extensive research, the Standards and International Relations Branch (SIRB) developed an Academia Standardization engagement strategy which outlines the key program areas for success. These program areas are as follows:

1. Partnerships and collaboration

Proactive engagement with Academia is crucial not only for SCC, but essential in Canada’s contribution to international and national standardization activities. SCC along with its partners recognize the fundamental contribution that educational institutions play, especially in teaching, and developing academic studies and research work in standardization. Appropriate training and guidance are required to position academia effectively to participate in standardization activities and ensure effective succession planning.

Collaborating with Academia on publishing papers, studies, research and integrating standards education in curricula help serve a crucial link to the greater public and effectively takes knowledge on standards to a wider audience.

Objective(s):

Using a model of collaboration and partnership with relevant stakeholders and academic institutes, create program offerings that would mutually benefit supporting the standards network.

Develop projects or programs with special conditions to access standards for academic institutes that promote the use of standards in teaching.

Develop collaboration opportunities to work with academic professors, researchers and educational institutes to integrate standardization in curricula.

Develop strategies that specifically target institutions to encourage and sustain participation by students in standardization engagement activities. These strategies should help students meet their goals, inform institutions about the value of participation and promote support of academia in standardization activities.

2. Outreach and engagement

Academia has traditionally had limited interaction with standards activities, particularly in areas of creating coursework and activities around standards education. Students are consistently looking for opportunities to share their ideas and contribute to building the future economy. Providing them with the right tools to express their thoughts can be extremely beneficial. It gives them an opportunity to build their profile, interact with others, while at the same time permits new ideas to flourish for the continuous improvement of services and the development of a value proposition aligned with their needs.

Objective(s):

Undertake work to identify relevant groups of students who would participate in the standards activities. Once identified, understand their preferred means of engagement and have the appropriate tools in place to educate, and empower them as a means to recruit and keep them involved in standardization. The engagement with academia has the potential to help ensure effective program delivery and monitoring.

Develop outreach strategies that link academia with industry, professional and standardization leaders for mutually beneficial collaboration on standards development both nationally and internationally. Respond to the isolation of the academics in standardization activities by increasing networking opportunities between the standards community and academia.

3. Communication and awareness building

Although technical standards are sometimes referred to in engineering/science courses, most institutes rarely provide a description of how standards are developed, the characteristics of standardization systems and of standards development systems. There is an evident lack of knowledge about standards, the benefits of standardization as well as the value of participating in standards development. As a result, academia's role in standards development is often overlooked, and is therefore often under-represented in technical committees who fail to prepare for next generation standards developers.

Keeping the needs and preferences of academia in mind, it is crucial to create and sustain benefits-oriented communication strategies that consistently reinforce the value of engagement through communication channels that are familiar to all levels of audiences in academia – such as students, professor, researchers and course developers.

Objective(s):

Develop a communication plan that enables appropriate understanding of standards within the academia audience to further enable them to effectively participate in standardization. It is important for academia to be able to clearly communicate the value proposition (and the benefit) of participation in standards development or conformity assessment activities. The development of a value proposition for the targeted audiences will provide the necessary toolkit for academia to ensure effective succession planning in national and international standardization activities.

Collaborate in developing audience-specific communication initiatives like workshops and seminars, on increasing knowledge on standards and how to participate in the Canadian standardization network.

Develop information materials for standards and standardization participation for students, professors, researchers and developers of educational materials.

4. Education and training

The standards community has many incentives to amplify education in standardization. Educating both students and academic professionals outside of the standards community helps address standards awareness within the community. Training in standards will address the lack of awareness and identified knowledge gap, which will, in turn, ensure that academia is equipped to participate, understanding the value of these activities.

Training can include the use and benefits of standards, the strategic importance of standardization for business and Canada's competitiveness, how to implement standards in businesses and how to participate in standards development to influence the content of future standards.

Objective(s):

Develop educational tools that provide an engaging experience for both newcomers to the standards network as well experienced member participants who want to develop new skills.

Develop a variety of training and mentorship opportunities to facilitate and encourage academia's participation in standardization.

In collaboration with educational institutes and relevant associations, host standardization networking opportunities for students (e.g. workshops, focus groups, webinars, work/study attachments, etc.) to expose a larger academia audience to the standardization network and encourage participation in standards development.

Example of a SCC Student Research Programme

Research plays an important role in standards-making. By exploring new concepts and testing innovative ideas, it makes a positive contribution to the work of our standards committees.

For this purpose, each year SCC may support research projects on topics relevant to standards and standardization, through a Student Research Programme.

Working in partnership with SCC on their research project means students can benefit from:

- Mentorship from an SCC employee / Technical Experts
- Access to standards, subject experts and networking opportunities
- A close association with SCC which may ultimately increase future employability

SCC's vision for mentoring initiatives

SCC defines mentoring as a supportive learning relationship: one between an SCC representative sharing their knowledge and experience and a student willing to benefit from this exchange to enrich their academic journey. In practice this means:

- Being able to constructively engage with your topic of research
- Giving thoughtful advice and guidance as to its applicability to standards development
- Providing support in addition to academic supervision from a university tutor

Conclusion

The failure to identify the need for and role of academia within the standardization network and adapt to their needs and style of operating risk failure, as an engagement value proposition designed for a more senior audience and their needs will gradually become less relevant. SCC needs to work towards establishing a clear description of the benefits of standards and of the need and value of education about standardization at the academic level.

SCC's Academia Standardization Engagement strategy must emphasize promoting proactive approaches to teaching standards and promoting participation in standardization activities. Educational training on standards must increasingly target not just current leaders but also include the next generation leaders who will be the users and developers of future standards.

To successfully identifying the role of academia within the standardization network and developing engagement value propositions designed to meet their unique needs, will give SCC an advantage in the global competition for time, money and leadership.