

QUEBEC CONFEDERATION FOR
ENGINEERING STUDENT OUTREACH

STUDENT AFFAIRS

**Memorandum written for the forum on
accreditation**



The Québec Confederation for Engineering Student Outreach (QCESO) is an association composed by Quebec's 14 engineering student associations, representing more than 23,500 students. Founded more than 30 years ago, its mandate is to protect, defend, and promote the interests, accomplishments, and development of its member associations. It seeks to promote respect for the values shared by engineering students in relation to their knowledge, actions, know-how, ethics, and competence, both professionally and personally. It also seeks to ensure that students are receiving a high quality education that truly prepares them for their future careers as engineers.

Finally, its activities seek to encourage the development and the broad diffusion of the sciences and of engineering among Quebec's students and the public. It also organizes two annual events, the Quebec Engineering Competition and the Engineering Games.

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Confédération pour le rayonnement étudiant en ingénierie au Québec

Quebec Confederation for Engineering Student Outreach

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Liste of Recommendations

Recommendation 1 :

That, for each accreditation visit, both of the following types of meetings with students be held by the visiting team:

- An open meeting with all students
- Interviews with a random sample of students

Recommendation 2 :

That a survey, prepared collaboratively by the CEAB and the student associations be sent to students, before each accreditation visit, in order to collect information on specific issues identified by both parties.

Recommendation 3 :

That a communication plan targeting students be put in place for each accreditation visit, in collaboration with the university and the student associations, in order to explain the process and outcome of the accreditation visit to students.

Recommendation 4 :

That the meeting between the elected representatives of the faculties' student associations and the visiting team be optimized and redesigned to allow the visiting team to better collect its information.

Recommendation 5 :

That accreditation norms and criteria be modified to ensure the best possible use of evaluations on professors and teaching in ensuring the continual improvement of engineering programs.

Recommendation 6 :

That the accreditation norms and criteria be modified in response to the causes of problems related to the workload of engineering students, as well as to implant measures to support students dealing with their consequences.

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Liste of acronyms

QCESO – Quebec Confederation for Engineering Student Outreach
CEAB – Canadian Engineering Accreditation Bureau
CACUSS – Canadian association of college and university student services

Introduction

The QCESO's mission is to bring improvements to the quality of education being provided to its student members, as well as their overall condition. As a result, it re-iterates its desire to work alongside the various professional orders, Engineers Canada, and university administrations on the subject of accreditation, as was the case during its participation in the forum on accreditation in Toronto. All of the opinions presented in this document are therefore submitted in a spirit of collaboration with these partners.

In preparing this brief, choices had to be made as to the issues presented. As a result, the subject of Accreditation Units (AU) and that of workload are not included. The QCESO instead sought to put forward other improvements and needed corrections, which it feels are just as important.

Following its participation in the Charbonneau Commission, the QCESO has maintained its momentum and distinguished itself as an actor that possesses a unique vision of a university education in engineering, due to the debates and discussions undertaken by its members, as much as the varied research projects it conducts. As examples, it has well developed content on the subjects of: ethics and professionalism in engineering schools, student engagement, the mental health and psychological well-being of students, professor-evaluation processes, and many more beyond these. It has also been able to produce data that had been heretofore unknown within Quebec universities on the number of cases involving plagiarism, and the reasons behind them, and on the evolution of the engineering student population over the last decade.

In the same way, it possesses a global vision of the academic atmosphere within Quebec's engineering institutes, including the professionalism and quality of their staff, the strengths and weaknesses of the teaching being provided, and the quality of the educative environment.

This document represents a synthesis of the QCESO's opinions on the subject of accreditation, expresses its point of view, and presents recommendations and corrective measures for ongoing issues. Specifically, it will address the involvement of faculty-level student associations in the accreditation process, the benefits for the CEAB of taking the opinions of individual students into account, and the educative environment related to accreditation.

Methodology

In order to target the specific issues highlighted in this brief, and to collect the information needed, two consultations were conducted. One was undertaken with former executive officers of the QCESO's member student associations, who were in office during accreditation visits; interviews were conducted with ten former executives. These student leaders were in office at various times over the last five years. The other consultation was undertaken with the currently elected student executives, who chose the QCESO's current work orientations, which is to say our priority issues this year.

In addition, telephone interviews were conducted and a document analysis undertaken for the purpose of developing our understanding of accreditation. As examples, the following were consulted:

- The Accreditation Criteria and Procedures Report 2015 (Accreditation Visit Cycle 2016 - 2017)
- The Complete questionnaire 2015 (Accreditation Visit Cycle 2016 - 2017)
- The Manual of Accreditation Procedures (Accreditation Visit Cycle 2016-2017)
- The Draft version of A Guide to Outcomes-based Criteria
- The Draft version of the document 3.1 Graduate
- The Suggested interview questions for Canadian Engineering Accreditation Board onsite visits
- Student health survey 2013, Canadian association of college and university student services

Integration of Students and Student Associations in the Accreditation Process

This chapter of the brief covers the consultation and mobilization processes for students and their associations within the overall accreditation process. Missed opportunities are presented, as well as possible improvements. In effect, it would be possible for the CEAB to be better supported in its work by these parties, who are able to speak to their program's respect of the norms for accreditation and to any corrections needed.

Current Situation

The CEAB Manual of Accreditation Procedures (January 2015 version) provides for some integration of students into the accreditation process. It stipulates that a team of visitors will "evaluate the quality of the students' work on the basis of face-to-face interviews with senior students" (page 3) and that the "schedule [...] include interviews with [...] students." (page 7) In turn, the Accreditation Criteria and Procedures Report 2015 (Accreditation Visit Cycle 2016 - 2017) explains that a "visit provides the occasion to undertake activities such as [...] interviews with students, individually and in groups."

Generally, during the accreditation visits over the past several years, the CEAB has held three different types of meetings with students, as follows:

- **A meeting between the elected leaders of the faculty's student association and the visiting team.** This allows the CEAB to ask the student leaders questions directly.
- **An open meeting of all students, in smaller universities.** Students are invited to come and respond to the questions posed by the visiting team and to express themselves freely, without other members of the university community present.
- **Interviews with a sample of students, in large universities.** The CEAB's visiting team meets with a sample of students, from each program to be accredited, to ask them questions.

The visiting team doesn't always proceed in the same manner, from one visit to the next or between one campus and another, and generally holds one or two of these types of meetings.

Student Perspective and Proposed Solutions for the Future of Accreditation

Meetings with Students

As presented in our description of the current situation, good practices were identified for the CEAB by student leaders as regards student consultations. These should be conserved. Specifically:

- Open meetings for all students, in small universities
- Interviews with a sample of students, in large universities.

Furthermore, the interviews conducted by the QCESO have described inspectors as being sincere in their interest and open to listening.

However, it would be possible to reinforce these practices by ensuring that both of these types of meetings are held during each visit, not just one or the other.

Doing so would allow for consultation of a wide variety of student opinions. What's more, while interviews allow one to explore certain subjects in greater depth, a period of open-ended discussion that is available to all students allows them to speak freely about their achievements, progress, knowledge, and university experience in relation to accreditation.

Finally, offering the possibility to all students of expressing themselves freely can resolve certain issues that have been noted in the past. In particular, it has been observed that, when the sampling of students consulted by the CEAB is selected by the department itself, opinions can be biased or influenced by that department. It would be preferable for this sampling of students to be random.

As such, in order to broaden the pool of students consulted during an accreditation visit, to ensure the neutrality and independence of the points of view gathered, and to include students on an individual level in the accreditation process, the QCESO recommends:

Recommendation 1 :

That, for each accreditation visit, both of the following types of meetings with students be held by the visiting team:

- An open meeting with all students
- Interviews with a random sample of students

Obtaining a more Complete and Accurate Portrait using Surveys

For universities with a large student population, it seems impossible for the visiting team to achieve a sufficiently complete portrait of students' perspectives in the time given. In short, the sample of students selected for interviews is too small to be representative, and a larger sample would allow for more enlightened decisions to be made. The solution to this problem, in a way that doesn't overload the CEAB, is to send out a survey to all students, in the weeks leading up to an accreditation visit, in order to receive their feedback on the topics related to accreditation.

A more global study of the student body would provide the CEAB with more complete and reliable data, allowing it to discern a program's strengths and weaknesses. Including the perspectives of those who are currently taking classes and acquiring knowledge during their studies is an absolute necessity in accurately determining a program's quality and, if needed, the corrections required.

This practice has already been in place for around ten years in the accreditation process for Canadian medical programs. As an example, during the last accreditation visit to the medical program at the University of Montreal, specific information on qualitative factors that are nearly identical to those measured by the CEAB was collected using a survey that was co-written by the faculty's student association and the accreditation bureau. Currently, the CEAB measures these qualitative factors by asking the visiting team to "develop an awareness of the overall environment including qualitative factors such as intellectual atmosphere and morale, professional attitudes and the quality of staff and students." (Manual of Accreditation Procedures; January 2015 version). A survey of this type would allow the CEAB to develop a much more accurate view of the different programs, in addition to being an economical use of time.

The questions used in the survey can be targeted through a close collaboration between the CEAB and the local student associations. If both parties were interested, a pre-visit report could subsequently be produced, to be added to the raw data, to help prepare the CEAB for its visit. Evidently, the QCESO would be glad to offer all of the time, assistance, and expertise needed to achieve this objective.

As such, in order to provide the visiting team, the student associations, and the universities with precise information on the different factors related to accreditation, as well as the most accurate and complete portrait possible, the QCESO recommends:

Recommendation 2 :

That a survey, prepared collaboratively by the CEAB and the student associations be sent to students, before each accreditation visit, in order to collect information on specific issues identified by both parties.

Communication with Students

As it currently stands, the accreditation process is quite removed from students. Far too often, students are uninformed as to the role of accreditation, its processes and objectives, or the CEAB's mission. In fact, students are rarely ever aware that a visit is taking place at their university or even that the CEAB exists, other than those who are involved in their local student associations.

An accreditation visit represents an important opportunity to inform students about its objectives. In turn, students who are more informed on the subject of accreditation will have more confidence in the quality of their education and its value. This can sometimes be a difficult form of confidence to instill, and it would be important to seize the opportunity created by an accreditation visit. What's more, in the context of students who are being invited to meetings and interviews with the CEAB visitors, and responding to surveys related to accreditation, providing them with information in advance would help in inciting them to engage in personal reflections and discussions with their peers on the subject of their education. It represents an excellent means of pushing them to prepare and mobilize themselves as fully engaged members of the process. Several simple means present themselves, including e-mails being sent out or the holding of presentations, open to all students, on the subject. Universities and student associations can also support the CEAB in this, through means such as their social media presence. As such, in order to promote a relevant and appropriate mobilization of students as an integral part of the process, the QCESO recommends:

Recommendation 3 :

That a communication plan targeting students be put in place for each accreditation visit, in collaboration with the university and the student associations, in order to explain the process and outcome of the accreditation visit to students.

Establishing a Partnership between the Faculties' Student Associations and the CEAB

As was stated in our description of the current situation, the CEAB meets with student leaders, meaning the elected leaders of the faculty's student association, during its visit. Each student association differs from the others, but they tend towards a common mission. As examples, they may contribute to student life, ensure the quality of the courses offered, deal with student complains, and propose improvements to the academic environment or put them in place itself. Finally, their elected representatives sit on many of the university's decision-making bodies. Student associations also benefit from the best access to students and is the closest group to them. More than any other body within the university, it can most easily consult students and best understand their realities.

As a result, several improvements could be made to the meetings between these student associations and the visiting team. The same is true of the collaboration between these two parties.

Currently, meetings with the student association are sometimes far too short: some have been as brief as twenty minutes. What's more, according to several interviews conducted by the QCESO, the questions posed at these meetings tend to focus more on student life, are sometimes personal questions to the students present, and rarely cover the subjects which are priorities of the visit. What came out very strongly in the interviews conducted by the QCESO is that the leaders of student associations who met with the CEAB found that they were not asked about a sufficient variety of issues, nor those that were the most important. As an example, the quality of education at their university was not raised at all in several of these meetings. Visiting teams are even provided with a list of suggested questions to ask to students, which touches on a number of issues considered to be a priority by current and past student leaders. Unfortunately, the CEAB has missed excellent opportunities to collect a great deal of information on these.

Yet, the various student associations possess excellent information about their own universities and represent one of the best sources of information for the CEAB on factors such as the academic environment of programs, since it is students who live those realities.

There are several ways in which the CEAB would benefit from the on-the-ground presence of student associations at their universities, and the resulting knowledge they possess about the

quality of the education being provided, that don't require any major additional efforts. First among these is for academic subjects to be discussed, such as the quality of the education being provided or the general academic environment present within the university. Other examples could be: involving student associations earlier in the process, using an agenda that is approved by both parties, or transmitting documentation to the associations that is more difficult for them to access.

As such, in order to establish a sustainable partnership between the CEAB and faculties' student associations, and for them to provide support in collecting information related to accreditation, the QCESO proposes:

Recommendation 4 :

That the meeting between the elected representatives of the faculties' student associations and the visiting team be optimized and redesigned to allow the visiting team to better collect its information.

Accreditation Norms: Quality of Education and Student Workload

This chapter of the brief presents issues that the QCESO believes require modifications or additions of accreditation norms to resolve. First of all, to improve the quality of education provided in Canada's engineering programs and, second, to respond to issues surrounding student workloads, which were raised during our consultations on accreditation.

Several improvements to accreditation norms and criteria could be made to accomplish these goals. However, some are more important than others. In particular, student evaluations of their professors and of their courses could be better measured and tracked. Improvements could also be made to students' access to support (accreditation norm 3.3) and to the general academic environment (accreditation norm 3.5).

Current Situation

The CEAB observes various aspects of the education being provided during its visits. Among other things, it evaluates engineering programs based on the 12 qualities of an engineer, which determine the overall qualities that an engineer must have when entering the job market.

Additionally, the CEAB evaluates the overall quality of education via the information collected by its visiting teams. This information is collected using questionnaires, filled out by the universities; through interviews with the university community; and an analysis of internal university documents. The indicators used to measure this quality were initially produced by the universities themselves, but the CEAB is now drafting its own indicators, which are available on its website.

In evaluating the quality of the professors, the CEAB primarily looks at their knowledge and experience in engineering. It only summarily takes student evaluations of professors into account, via interviews during the accreditation visit.

Finally, the CEAB takes into account the overall academic environment in a program, based on qualitative factors that include the morale of its students, the intellectual atmosphere present, and the quality of its personnel and students. Its understanding of the academic environment is primarily developed through interviews undertaken during the accreditation visit. It also ensures that support is offered to students in form of counselling and orientation, by verifying that "sufficient processes and resources [are] available to provide students with counsel." (accreditation norm 3.3)

Student Perspective and Proposed Solutions for the Future of Accreditation

Evaluation of Teaching and Teachers

As a central element of teaching, students are well placed to identify what needs improvement. Many schools understand the value added by student consultation and apply it at various levels, such as through programs to evaluate both professors and the education provided, or through program-specific discussion forums. As an example, each semester, ETS invites representatives from its engineering programs to discuss the results of student evaluations. However, these best practices are not present at every university. Just as often, even though students are surveyed on the quality of teaching, few if any improvements actually come of it. Other times, delays are left too long between evaluations of either courses or professors.

This issue is so important that the QCESO's member student associations unanimously decided to make it a major project this year. Student leaders are so conscious of these problems that they've made the decision to take responsibility for its resolution. Effectively, every single university has its own problems related to this issue.

The capacity of professors to transmit knowledge and the structure of courses are determining factors in the quality of the education being given, as well as in students' educational outcomes. In the interest of continual improvement, it is critical that programs have access to data, including that collected through student evaluations. What's more, this data needs to have a positive impact. Currently, the CEAB's accreditation norms consider the quality of professors and courses principally through the lens of their knowledge and experience in engineering. As such, the QCESO recommends:

Recommendation 5 :

That accreditation norms and criteria be modified to ensure the best possible use of evaluations on professors and teaching in ensuring the continual improvement of engineering programs.

Student Workload

It is widely recognized that the workload required of students in engineering is one of the heaviest among all university programs. Indeed, to such a degree that the subject came up during the current consultations on accreditation led by Engineers Canada.

There is little data available to measure the specific workload in engineering. However, data for university students in general does exist. A survey conducted by the Canadian Association of College & University Student Services (2013) showed that:

- 53.8% of students stated that they had feelings of hopelessness during the last year;
- 89.3% of students stated that they felt overwhelmed during the last year;
- 86.9% of students stated that they felt mentally exhausted during the last year.

Several course of action could be considered in addressing the causes of this problem. Undoubtedly, the flexibility of progressing through one's degree is a part of it, as is a good distribution of the workload across university semesters and throughout the degree as a whole.

In turn, the consequences of this issue are severe, affecting students' mental health. Evidence of this can be seen in the fact that a spotlight was put on the mental health of students by the University of Montreal's ombudsman in 2015, and by the École Polytechnique's in their three annual reports between 2011 and 2014. Part of the solution is to be found in changes to the accreditation norms on students' access to support (accreditation norm 3.3) and the overall academic environment, dealing with student morale (accreditation norm 3.5).

In order to reduce the causes and consequences of this workload on students, the QCESO recommends:

Recommendation 6 :

That the accreditation norms and criteria be modified in response to the causes of problems related to the workload of engineering students, as well as to implant measures to support students dealing with their consequences.

Conclusion

In conclusion, the QCESO wishes to re-iterate that students—both individually and collectively through their student associations at the faculty, provincial, and federal level—are critical and integral partners in education. Including them in the processes surrounding accreditation visits will provide concrete improvements to their education and, as a result, lead to a greater contribution by engineers to Canadian society. The same can be said of a better integration of their suggestions and critiques, collected via effective student evaluations, and of putting measures in place to respond to the challenges produced by the workload of university-level engineering programs.

As a consequence, all of the recommendations present in this brief are presented with the firm desire of the QCESO to work, in collaboration with all of the parties involved in educating Canadian engineers, towards concrete improvements to the accreditation norms as they stand today.

The QCESO firmly believes that the tools required to pursue this objective are already at hand, as much for the student associations involved as for the professional orders and Engineers Canada itself.

References

The Accreditation Criteria and Procedures Report 2015 (Accreditation Visit Cycle 2016 - 2017)

The Complete questionnaire 2015 (Accreditation Visit Cycle 2016 - 2017)

The Manual of Accreditation Procedures (Accreditation Visit Cycle 2016-2017)

The Draft version of A Guide to Outcomes-based
Criteria https://www.engineerscanada.ca/sites/default/files/draft_program_visitor_guide_v1_25_fr.pdf

The Draft version of the document 3.1 Graduate
Attributes https://www.engineerscanada.ca/sites/default/files/ga_v3.2_fr.pdf

The Suggested interview questions for Canadian Engineering Accreditation Board onsite
visits

Student health survey 2013, Canadian association of college and university student services