

UNDERSTANDING THE SKILL GAP OF POST-SECONDARY GRADUATES ENTERING THE ACOUSTIC CONSULTING PROFESSION

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1 Introduction

The acoustic consulting profession in Canada is comprised of consultants with a diverse range of technical backgrounds as formal acoustics-based education programs remain limited in provinces and territories. As a result, currently, post-secondary graduates lack the necessary skillsets to meet the needs of consulting firms that would benefit from these employees entering the workforce.

This skills gap between post-secondary education and the acoustic consultant industry is investigated through a survey of practicing acoustic consultants. Results from the survey are summarized to assess the most in-demand skills for the next generation of acoustic professionals with a focus on educational program development. The results of this survey may also give valuable insight to new graduates on how they can educate themselves on these critical skills to give them an advantage as they start a career in acoustic consulting.

2 Methodology

2.1 Creating the survey

A literature review was conducted on similar past studies and publications, which served as a resource of what type of questions would be asked in such a survey. One referenced study was conducted in India, which focused on the employability of newly graduated engineers with no particular specialization [1].

Based on this review, a 25-question survey was created to gather opinions and anecdotes from working acoustic consultants on the topics of demographics, hiring, job skills, and education. The survey is a combination of multi-select and write-in answers which were summarized to determine trends and commonalities.

Participants

This survey was sent to actively working acoustic consultants in firms of varying size and specialties. There were 28 Canadian participants located in Ontario, Quebec, and Nova Scotia and 15 international participants from the United States, United Kingdom, and Australia.

This survey was voluntary for all participants, who were informed of the purpose of the survey and what their answers would be used for. They were also informed that the survey was anonymous.

Although this study is conducted with the focus on the lack of Canadian post-secondary education in acoustics,

international opinions are of particular interest as there is more awareness and opportunities for acoustics-focused formal education globally.

2.2 Validation of the survey

Both quantitative and qualitative methods were employed in order to establish the validity of the survey. The survey was expert reviewed to determine the face validity and content validity in relevance to the topic at hand. Potential biases or ambiguity stemming from the wording or ordering of questions were discussed and minimized. Pre-testing was conducted with a small sample of respondents who filled out the survey in the presence of the survey conductor in order to gather their immediate thoughts on the clarity and ease of answering the survey.

For quantitative validation, the answers to the multi-select questions were analyzed using Cronbach's Alpha [2]. This determines the consistency of responses across questions. In a range of 0 to 1, 0.7 is considered the minimally acceptable benchmark value for internal consistency. The Cronbach's Alpha for the collected dataset of this survey was calculated to be 0.87, therefore validating the multi-select questions.

3 Results

3.1 Education

When asked what they would consider to be the ideal diploma held by a potential new hire, 75.0% of Canadian consultants answered a Bachelor of Engineering of varying specialties. 17.8% responded with a B.Sc or B.A.Sc in relevant disciplines such as physics and architecture, and 7.2% answered with an international Bachelor's in Acoustics.

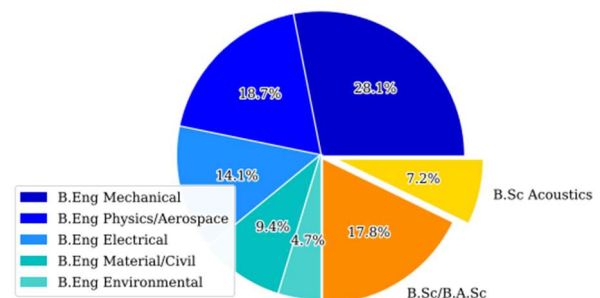


Figure 1: Ideal diploma for Hire Candidates According to Canadian Acoustic Consultants.

In comparison, two-thirds of international consultants answered that they considered a degree in acoustics to be the ideal diploma.

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In response to what knowledge and skills needed for acoustic consulting, regardless of degree and nationality, consultants believed to be missing from post-secondary education, answers could be sorted into three main categories: in-depth acoustical theory, applied multidisciplinary acoustics concepts, and practical consultancy skills. Within the category of theoretical acoustics, consultants specified in which specializations they believed more education was needed: vibrations and waves through solid state material, and reflections and propagation of sound in buildings. Practical consultancy skills included mentions of technical report writing, client interfacing, and project procedure.

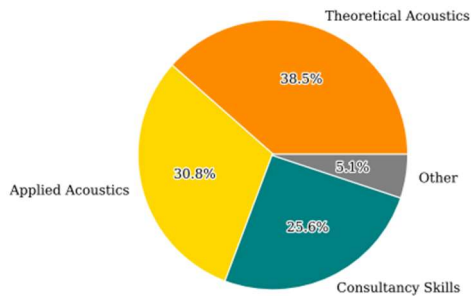


Figure 2: Critical Acoustic Consulting Education Missing from Post-Secondary Programs, According to Participant Consultants.

3.2 Employment

The consultants were asked what they looked for the most when reviewing resumés of candidates for hiring. Responses fell into three main categories: soft skills and culture fit; fundamental math, physics, or acoustic skills; consultancy skills.

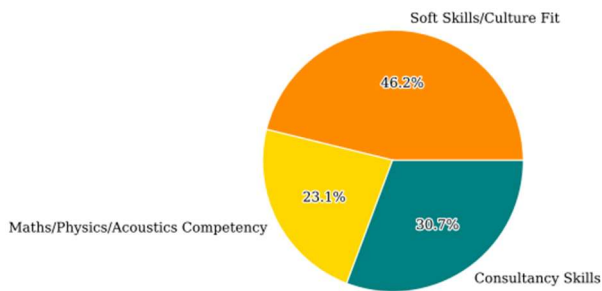


Figure 3: Most Important Qualifications of Potential Hires, According to Participant Consultants.

When asked what the biggest challenge they faced in hiring new team members, 60% of consultants answered that they're having trouble simply finding people who are interested and have the right competencies. 26% of consultants answered that they have trouble finding qualified candidates with industry skills and background. 14% indicated other difficulties, such as getting candidates up to speed on projects.

4 Discussion

Almost one-third of all consultants answered that a degree in Mechanical Engineering was most ideal for new candidates, while there is more spread for other engineering spe-

cialties. It can be stated that specialties in which a consultant works is the largest influence on which diploma they believe would benefit a candidate the most; all participant consultants have experience in a combination of environmental acoustics, architectural acoustics, and/or vibration, with experience in other specializations such as aeroacoustics and psychoacoustics to lesser degrees.

Regardless of degree, consultants have expressed that they believe there to be a lack of education in the critical areas which compose the work of acoustic consulting. Even so, soft skills such as eagerness to learn and ability to communicate ideas are stated to be of almost equal importance when considering a candidate to hire.

From the consultants' perspectives on the difficulty of hiring, only approximately 30% of consultants use external resources such as job boards and university databases to find candidates. This implies that consultants aren't reaching a wider audience of potential candidates, and candidates aren't aware that these job opportunities exist for them to aim for.

However, in contrast to the idea that the lack of Canadian post-secondary education in acoustics is negatively affecting the employment rates of new graduates, 85% of consultants answered that they were at least "very likely" to hire a new graduate within the next 10 years, and 20% said they had active plans to hire a new graduate within the next 5 years.

5 Conclusion

With the focus on educational program development for the purposes of preparing graduates for a potential career in acoustic consulting, the first step is promoting awareness of the field to the student bodies of relevant faculties. Courses could be offered that teach acoustics from a multidisciplinary/multispecialty perspective such as environmental attenuation, propagation through buildings, and solid matter vibration.

When it comes to finding employment, graduates have very positive prospects if they take the initiative to educate themselves in these areas that their degree failed to cover, and to personally connect with working acoustic consultants to express their interest in the field.

Acknowledgments

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References

- [1] A. Blom, H. Saeki. Employability and Skill Set of Newly Graduated Engineers in India. The World Bank South Asia Region Education Team (2011).
- [2] L.J. Cronbach. Coefficient Alpha and the Internal Structure of Tests. Springer Science and Business Media LLC (1951).